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U.S. ARMY CHEMICAL AND BIOLOGICAL DEFENSE COMMAND

ERDEC-SP-021

**AFTER ACTION REPORT
FOR THE SERVICE RESPONSE FORCE
CONDUCTING OPERATION SAFE REMOVAL,
5 JANUARY - 3 FEBRUARY 1993**

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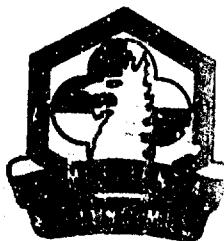
Jeffery K. Smart

CORPORATE INFORMATION OFFICE

March 1994

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13. ABSTRACT (Maximum 200 words) Operation Safe Removal was the designation for an emergency Service Response Force (SRF) mission at Spring Valley, Washington, DC. The SRF work was designated Phase I of the clean-up of the former American University Experiment Station site, designated a Formerly Used Defense Site (FUDS) by the U.S. Army Corps of Engineers. During Phase I, the SRF safely recovered and removed 144 WWI era munitions, some of which contained toxic chemical agents, from a residential construction site. This operation was accomplished with the complete approval of environmental officials, local and state officials, DoD officials, and local residents.			
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****When this study was conducted, the U.S. Army Chemical and Biological Defense Command was known as the U.S. Army Chemical and Biological Defense Agency.**

PREFACE

This work was started in January 1993 and completed in February 1993.

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Acknowledgments

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**AFTER ACTION REPORT FOR THE SERVICE RESPONSE FORCE
CONDUCTING
OPERATION SAFE REMOVAL**

5 JANUARY - 3 FEBRUARY 1993

1. PURPOSE/BACKGROUND:

1. On 5 January 1993, a construction worker using a backhoe to dig a sewer line at 5111 52nd Court in the Spring Valley area of Washington, D.C., unearthed what subsequently was identified as a World War I era chemical munitions disposal pit. Historical research determined that the site was part of the American University Experiment Station, a Chemical Warfare Service research laboratory and proving ground operational from approximately 1917-1919.

2. The initial response force to the site included the 67th Explosive Ordnance Disposal (EOD) Detachment of the Military District of Washington (MDW), and the Technical Escort Unit (TEU). The TEU personnel quickly confirmed the presence of suspected chemical munitions and began removal operations.

3. On 7 January 1993, the U.S. Army Materiel Command (AMC) assumed control of the incident site and organized a Service Response Force (SRF) under the command of Brigadier General George E. Friel, U.S. Army Chemical and Biological Defense Agency (CBDA), to conduct removal and clean-up operations at the site. The operation was designated Operation Safe Removal.

2. OPERATIONAL SUMMARY:

A. INITIAL RESPONSE FORCE PHASE (5-7 January 1993):

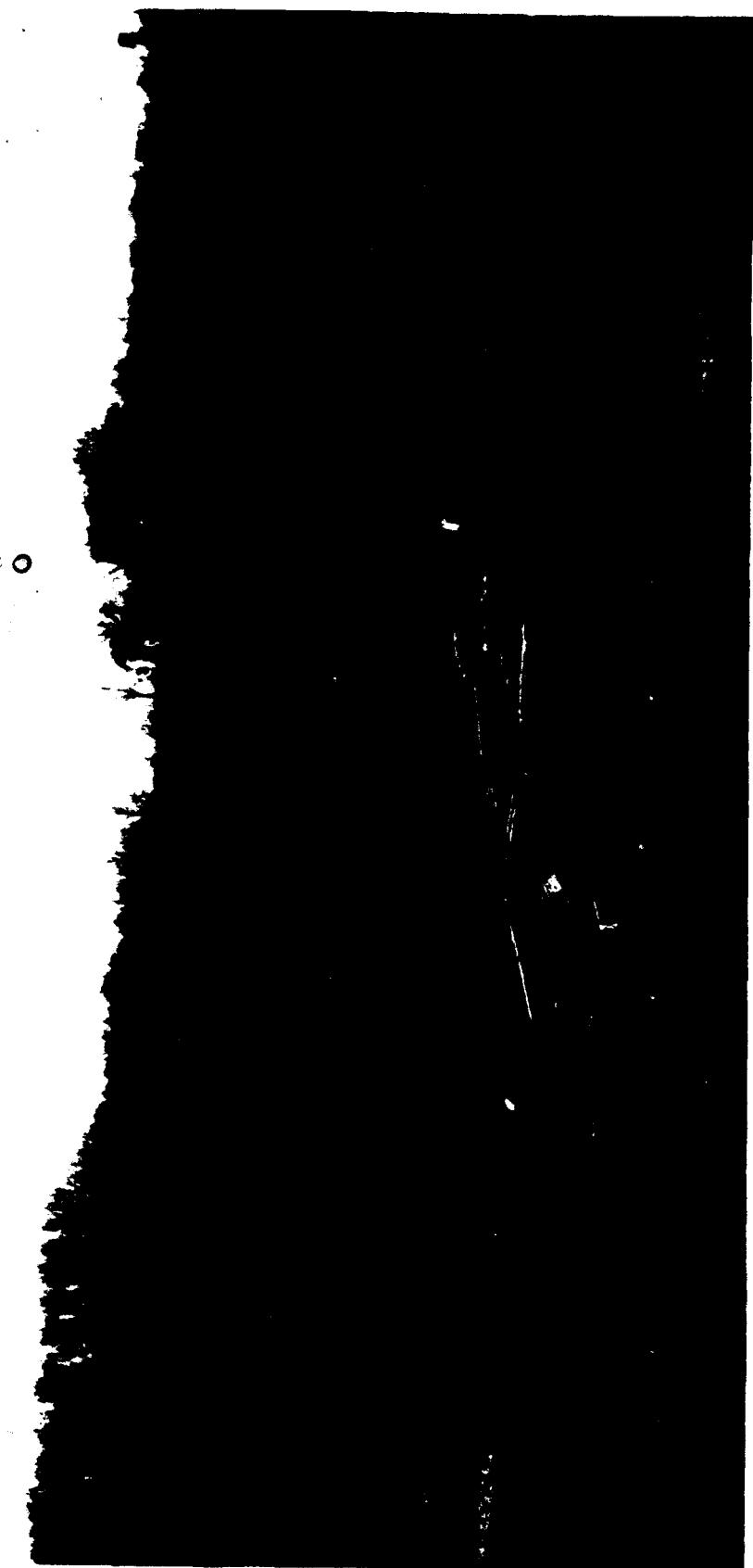
1. The site of the munition discovery was in the Spring Valley area of northwest Washington, D.C. between Dalecarlia Parkway and Massachusetts Avenue, south of Westmoreland Circle. The area immediately surrounding site consisted of recently constructed homes in a residential community. The trench where the munitions were discovered was within a few feet of the front of a home under construction. The unoccupied homes were the property of the W.C. & A.N. Miller Development Company which had owned the land since 1926.

2. Historical research determined that the discovery site was part of the American University Experiment Station which was the center of U.S. Army chemical warfare research, development, testing, and training during World War I. American University,



1918 Aerial View of American University Experiment Station

1918 Ground View of Circular Trenches



1918 Inside View of Circular Trenches





1918 View of Ground Weapons Tested at American University Experiment Station
to Include Stokes Mortars and Livens Projectors

located within a mile of the site, allowed the Bureau of Mines to conduct early chemical warfare research on their property starting in the summer of 1917. An additional 150 acres of privately owned land adjacent to the University was used as a trench mortar proving ground. The site of the buried munitions was a disposal pit adjacent to a circular set of trenches used for static firing of chemical munitions. In 1918, the Bureau of Mines work was transferred to the newly established Chemical Warfare Service and the personnel were assigned to the Research Division and the Medical Division. Following the end of the war, the trenches and pits were reportedly filled in and the land returned to its owners. The Research Division was transferred to Edgewood Arsenal in 1919. (See Historical Section, Volume 3 of Reports, for additional historical information on American University Experiment Station during World War I.)

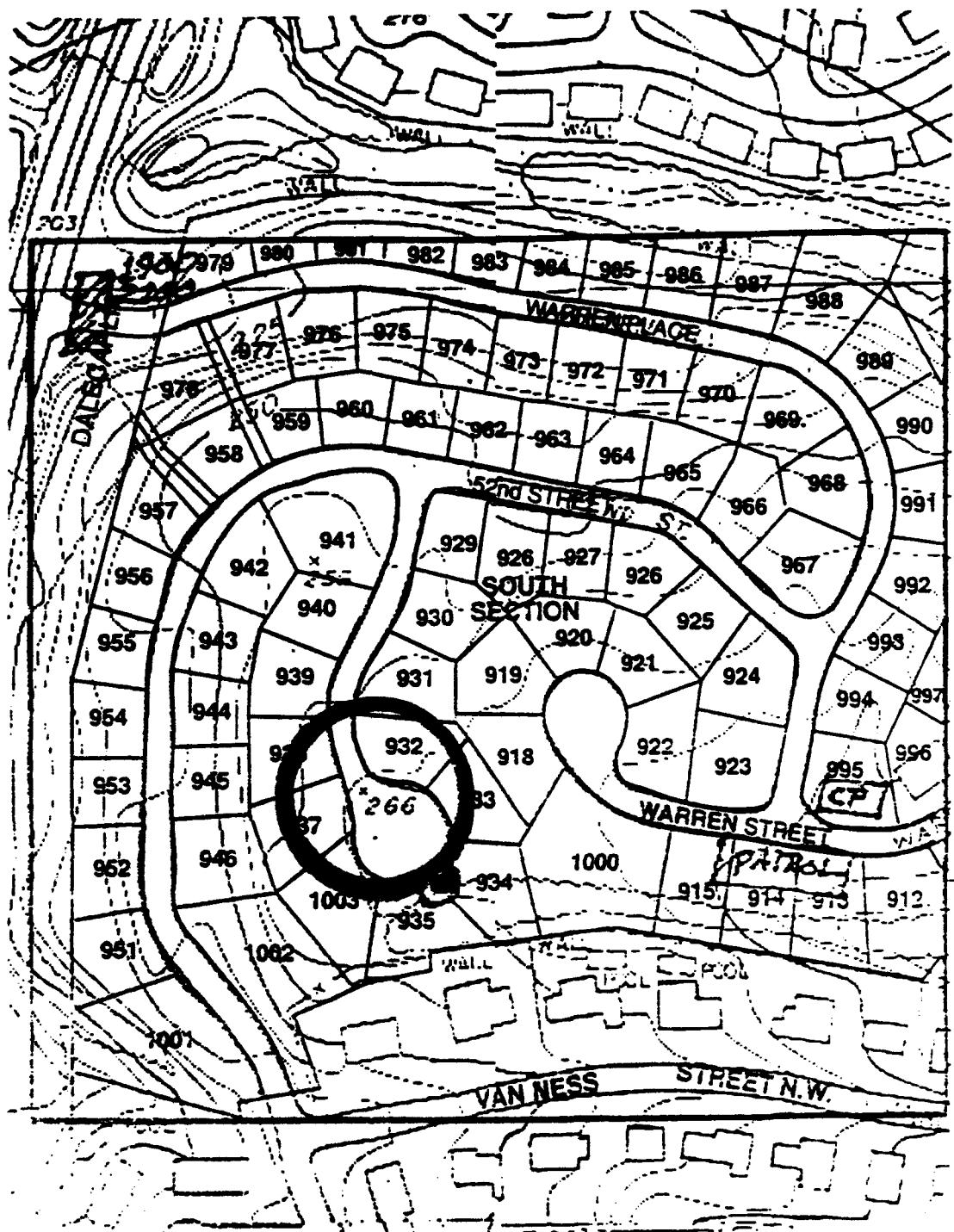
3. On 5 January 1993, the initial discovery took place at approximately 1340 hours when the backhoe operator punctured a Livens projectile and a loud hissing noise was heard. Following the discovery of the munitions, the Metropolitan Fire Department arrived at the site. They requested support from their Hazardous Materials Unit which identified the munitions as military items. The Metropolitan Police Department Bomb Squad was also called to assist.

4. The MDW, Office of the Deputy Chief of Staff for Operations, Plans, and Security at Fort McNair, Washington, D.C., was then notified of the incident. At approximately 1510 hours, the 67th EOD assigned to the MDW arrived on-site and reported the possibility that the munitions might be chemical munitions. The 67th EOD contacted the TEU to respond to the site and dispatched a U.S. Park Police helicopter to provide transportation.

5. Lieutenant Colonel William T. Batt, TEU Commander, and two TEU EOD noncommissioned officers arrived at the site by helicopter at approximately 1830 hours. The remainder of the initial TEU response team arrived by vehicle at approximately 2000 hours with a Police Department escort. Shortly after the TEU elements arrived, they confirmed that the unearthed munitions were potentially filled with chemical agents. Coordination meetings with DC officials and LTC Batt were then held at Headquarters, 67th EOD that evening. A plan to first recover the visible munitions, sift through the dirt piles, and then clear the pit was decided upon. A timetable, evacuation of the residents, and a security plan were also worked out. These meetings were finished around 0230 hours.

6. As the Initial Response Force (IRF) gathered on 6 January, Colonel Duane Hardesty, MDW Deputy Commanding Officer, was designated the IRF Commander. Lieutenant Colonel Batt was the Site Commander.

7. The early morning of 6 January was spent preparing for operations to commence. A hot line was operational by 0830 hours.

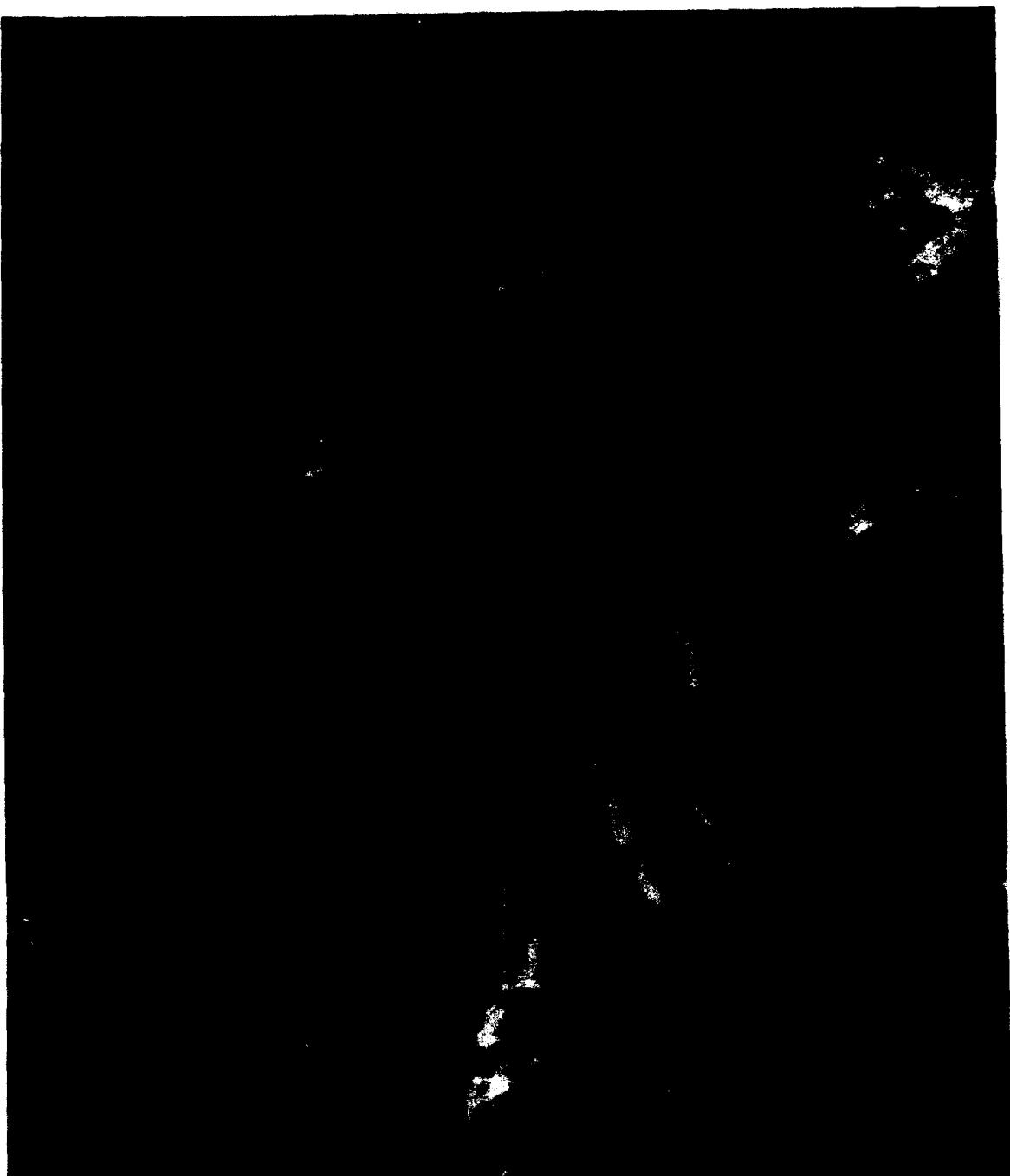


1918 Circular Trench Pattern Superimposed
on 1993 Plot Plan of Spring Valley

5111 52nd Court and Pit



Munitions Visible in Pile Next to Pit



Munitions Visible in Pit



At 0919 hours, the first team crossed the hot line wearing gloves, overboots, coveralls, and slung M17 protective masks. At 0937 hours, Colonel Hardesty and the Fire Department coordinated an evacuation of all homes within 300 meters of the site. The initial work involved segregating liquid and solid filled munitions from the two piles of earth on either side of the pit. The first day's work ended at 2030 hours.

8. Although the confirmation of chemical munitions was reported as a chemical event, no chemical surety material or hazardous substance was spilled or released into the environment. After a full day of examination and removal of the visible munitions, the MDW requested that the Department of the Army activate a Service Response Force to complete the removal operation.

B. SERVICE RESPONSE FORCE PHASE (7 January - 3 February 1993):

1. The decision to activate a Service Response Force (SRF) was based upon the guidance contained in the U.S. Army Materiel Command's "Chemical Service Response Force Commander's Emergency Response Plan," (revised draft, April 1991), pp. 1-2. The guidelines, procedures, and suggested organization of the SRF for Operation Safe Removal were based upon this plan.

2. Two key factors determined the operational planning. First, American University Experiment Station was a research site that experimented with most World War I era munitions to include chemical, toxin, smoke, high explosive, and incendiary weapons. This meant that recovered munition configurations would not necessarily comply with the standardized version illustrated in the EOD and ammunition related technical manuals. Second, due to the close proximity of a large residential area, the removal operations required extra precautions, security, and public affairs coordination.

3. The SRF was activated on 7 January at approximately 1030 hours and Brigadier General Friel, SRF Commander, arrived on-site at 1930 hours to assume operational control. After briefings concerning the TEU operations to date and the type of agents and munitions that might be present in the rounds, he confirmed that the munitions presented an imminent and substantial danger to the public health and welfare.

4. On 8 January, Brigadier General Friel established an Operations Center in a partially completed house on-site to support the removal operations. At the Operations Center, he established his team of specialists to coordinate public affairs, hazard analysis, on-site safety, security, medical support, fire and police support, historical research, legal advice, environmental coordination, and transportation of the munitions to a storage or destruction site once removed from the ground. Over the next



Brigadier General George E. Friel

Headquarters, Operation Safe Removal



few days, additional organizations arrived on-site or were alerted to provide support. These included a Decontamination Platoon of the 101st Chemical Company, elements of the Federal Emergency Management Agency (FEMA), the Corps of Engineers, Center for Disease Control, and Occupational Safety and Health Administration. Already on-site during the Initial Response Phase were the Environmental Protection Agency (EPA), the American National Red Cross, local police and fire departments, the Office of Emergency Preparedness, and the Secret Service (due to the location of the Vice President's residence).

5. On 12 January, TEU personnel completed removal of the munitions disturbed by the backhoe operator and began active operations to locate additional munitions still buried in the ground. The total count of munitions recovered at that time were 19 liquid filled and 39 solid filled munitions. The liquid filled munitions were placed in single round containers for shipping while the other items were stored in field expedient bunkers created by using metal storage vans. Liquid and solid filled rounds were stored in separate military-owned demountable containers (MILVAN).

6. The transportation of the munitions for storage and/or disposal proved a particularly challenging hurdle. After serious deliberation, Brigadier General Friel determined that the liquid filled munitions were to be flown off-site by helicopter to Andrews Air Force Base for later air shipment to Pine Bluff Arsenal, AR. The solid filled munitions were to be flown to Fort A. P. Hill, VA, for explosive destruction. The scrap metal was to be disposed of in a hazardous waste landfill. The contractor for the scrap metal decided on a New York State landfill. Movement of the intact munitions required extensive coordination with each installation and state's environmental protection staff. In addition, on-site weather, safety, security, media interest, and the upcoming Presidential inauguration all played a role in the planning.

7. On 14 January, the first shipment of 17 liquid filled munitions left for Pine Bluff Arsenal and arrived there safely the next day. On 16 January, three liquid filled rounds were sent to CBDA for analysis. At the same time, TEU personnel began digging deeper into the original pit and discovered a large number of munitions still buried. This new discovery put the total rounds removed from the pit at 82 by 16 January. Due to the need for local police and fire personnel to support the upcoming Presidential inauguration and the lack of hotel space for the SRF team, Brigadier General Friel made the decision to cease operations until 21 January to allow the local residents to return to their homes for the long weekend (Martin Luther King Holiday and Inauguration Day). This decision was made with the concurrence of the local residents.

8. Removal operations resumed on 21 January and continued through 28 January. On 26 January, the pit was declared free of

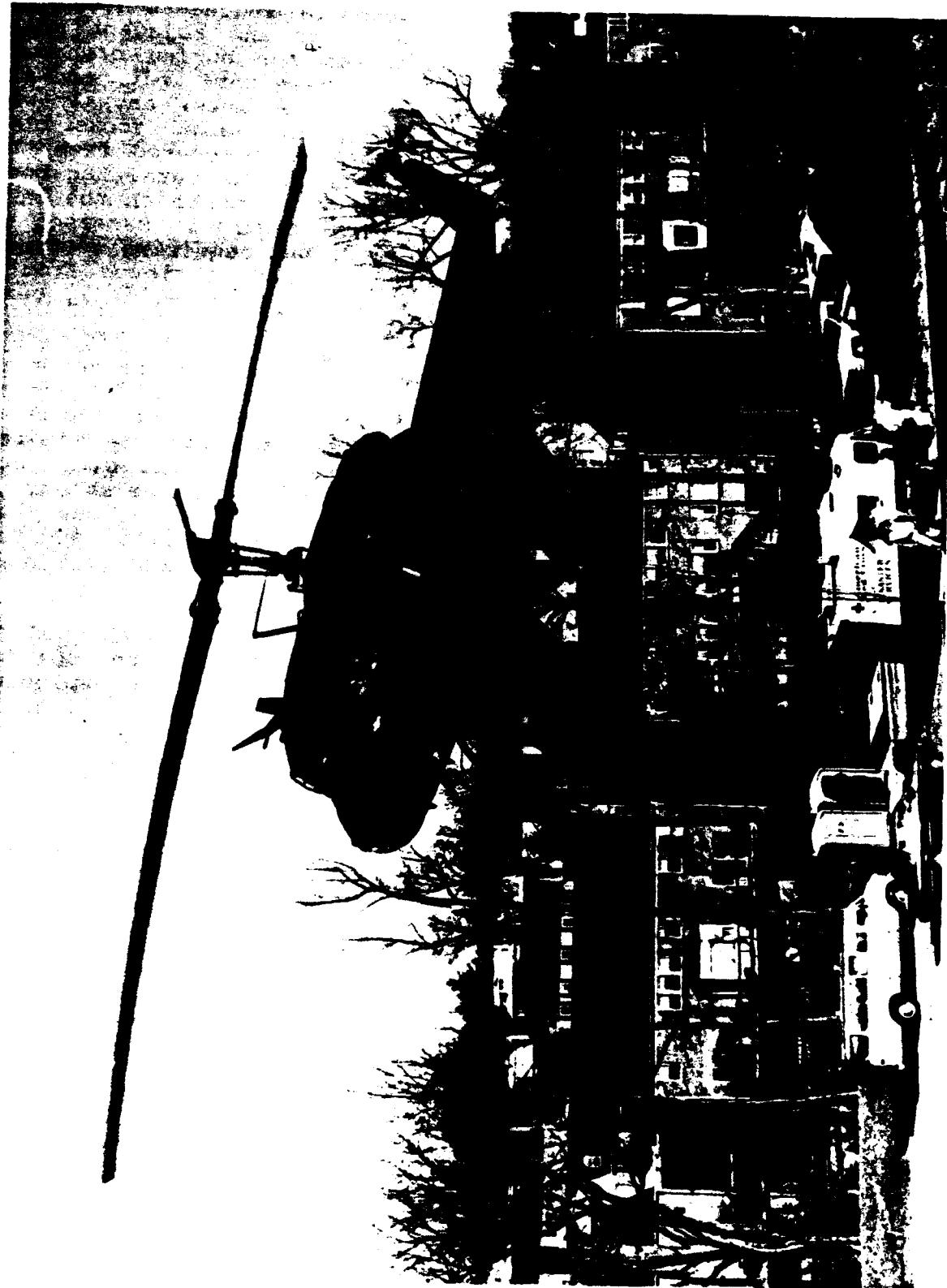
The Assessment Tent



The Packaging Tent



Helicopter Transportation Operations



ordnance and certified clean by the Corps of Engineers (COE) and TEU. Based upon COE magnetometer sweeps of the adjacent area, three additional pits were dug to search for buried ordnance. Only a portion of one round was found in these three pits and all were declared clean on 28 January. The magnetometer anomaly was determined to be caused by iron filings in buried rocks. 144 munitions and high explosive components were recovered from the site, as well as several tons of metal scrap. The total had been 147, but three of the items were reassessed as scrap on the last day. This included five rounds which were originally assessed as scrap, but were later reassessed as empty, but requiring destruction. This included one liquid filled munition retrieved from a residence off-site and one round recovered from a partially constructed house next to the original pit.

9. Due to problems with the voluntary evacuation of the surrounding 300 meter safety zone, Brigadier General Friel requested the Washington D.C. Mayor to declare a limited state of emergency in Spring Valley on 23 January. The Mayor approved the limited state of emergency on 27 January. This empowered the civil authorities to enforce the evacuation requirements for the safety of the residents who refused to leave their homes for various reasons. Actual evacuations were conducted from 5-8, 11-15, and 21-28 January and were limited to the hours in which TEU personnel were conducting removal operations.

10. Thirty-five suspected chemical rounds were shipped to Pine Bluff Arsenal for storage. Nine rounds were sent to CBDA for analysis. Ninety-eight solid filled rounds and high explosive components were thermally treated by detonation at Fort A.P. Hill, and the soil tested to ensure there was no contamination. Several items, including a sealed pipe and a lead ball, were sent to Fort Detrick and then to CBDA for testing. The scrap was shipped to a land-fill in New York.

11. Both on-site and off-site analysis determined that some of the munitions contained or at one time contained chemical or toxic smoke agents. On-site soil analysis tests found trace amounts of Lewisite (L) and Adamsite (DM) and their degradation products in the pit. A sticky fluid leaking from a fuse was found to be the lacrymator chloroacetophenone (CN). Off-site analysis of the munitions by CBDA during the course of the operation and at the conclusion determined that one round contained mustard agent (H) and two rounds contained fuming sulfuric acid, an experimental smoke mixture.

12. Throughout the operation, Brigadier General Friel resolved to keep the local residents informed of his operations. On 8 January, he announced that he would hold daily meetings with the residents and establish a telephone "hotline" beginning 11 January. A Joint Community Information Center was also activated for the benefit of residents and the media. This open policy drew applause and appreciation from the local residents at the final residents' meeting on 2 February.

Brigadier General Friel Signing Photograph for Residents at End of operation



13. Due to the possibility of other munition burial sites on the land used by American University Experiment Station, the SRF operations were declared Phase I of a two phase plan to certify the entire 500 acre area as being free of buried munitions. The COE determined the site to be a Formerly Used Defense Site (FUDS) eligible for remediation and restoration. Brigadier General Friel held a transition meeting with the COE on 29 January to ensure the COE had all the necessary information to continue operations during Phase II.

14. The deactivation of the SRF was initiated on 29 January. Phase I was officially terminated on 2 February 1993 with the closure of the Operations Center, although many of the SRF personnel had already been deactivated. The final group returned to their home organizations on 3 February 1993.

3. OBSERVATIONS AND RECOMMENDATIONS:

A. LESSONS LEARNED:

1. Each key staff member and participating unit prepared an after action report that included lessons learned based on their experience. The individual after action reports are contained in five separate volumes (limited distribution).

2. There were a number of lessons learned that applied to the overall SRF. These are reported in Appendix A.

B. UNRESOLVED PROBLEMS:

1. There were four key issues that were unsolvable at the SRF and CBDA level. These problems should be resolved by higher headquarters as soon as possible prior to the next need for a SRF.

a. Lack of IRF for FUDS with Chemical Munitions. The IRF was intended to handle emergency recovery of a small number of conventional chemical munitions. Due to the site being a known chemical research FUDS, a site specific plan to include historical information, potential munition configurations, maps, and past removal experience should have been completed in advance. In addition, all chemical FUDS should have emergency plans in place, with digging restrictions and notification procedures well established. An IRF for these chemical FUDS should be organized, trained to handle non-conventional World War I and World War II chemical munitions and laboratory waste, and placed on stand-by prior to any construction or digging operations within the FUDS.

b. Lack of a Programmatic Environmental Impact Statement. The SRF Commander not only developed operational solutions, but had to obtain concurrences from multiple regulatory agencies on matters of real concern and controversy. Although commanders are prepared for such challenges, the Army should develop operations

plans and obtain the regulatory concurrences beforehand to facilitate operations during future emergencies.

c. Lack of a Plan for the Disposal of Contaminated Soil. The SRF Commander had no guidance concerning disposal of soil contaminated by chemical agents. The Army needs to develop and coordinate a plan for the decontamination, packaging, transport, and storage/disposal of contaminated soil.

d. Lack of Criteria for Termination of Emergency Phase. The SRF Commander had to develop the criteria used to terminate the emergency phase and obtain concurrences from the multiple commands and agencies involved. In order to facilitate a smooth transition from the emergency phase to the termination phase, the Army should develop and coordinate termination criteria beforehand.

C. CONCLUSION:

1. Brigadier General Friel organized a Service Response Force as directed two days after the initial discovery of World War I era chemical munitions in Washington, D.C. This force safely recovered and removed 144 munitions and munitions components from a heavily populated area without harm to the surrounding neighborhood or to the soldiers and civilians involved in the operation. This operation was also accomplished with the complete approval of environmental officials, local and state officials, DOD officials, and the local residents.

2. Appendix B is a catalog of all SRF documents. This catalog lists the Commander's daily situation reports, correspondence, and handouts, the participants' after action reports, photographs, maps, and other items of historical interest generated during Operation Safe Removal.

APPENDICES:

A. Lessons Learned from Operation Safe Removal

B. Catalog of Documents

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APPENDIX A

LESSONS LEARNED FROM OPERATION SAFE REMOVAL

1. The following lessons learned were compiled from the After Action Reports of the staff and operations officers. This summary of lessons learned includes those that impacted the overall Service Response Force (SRF).

2. STAFF/HEADQUARTERS OPERATIONS:

A. SRF STAFF COMPOSITION

Issue: According to existing plans and rosters, the SRF Commander did not have latitude to select his own staff and the organization of the SRF for the unique nature of the operation.

Discussion: The U.S. Army Materiel Command's "Chemical Service Response Force Commander's Emergency Response Plan," (revised draft, April 1991) outlined the organization of SRF Commander's staff. In addition, there is a standing SRF roster maintained by the U.S. Army Armament, Munitions, and Chemical Command (AMCCOM). Although Operation Safe Removal was an atypical service response operation, similar operations may occur during Formerly Used Defense Sites (FUDS) restoration projects.

Recommendations:

1. The SRF Commander should have the latitude to select a staff that he can quickly assemble and that will meet his needs. Rather than relying on the standing SRF roster maintained by AMCCOM, the designated SRF Commander should utilize his own staff to the maximum extent practical, with additional augmentation on a case by case basis.

2. The AMC Service Response Force Plan should be modified to include the necessary organization for a FUDS scenario.

B. EMERGENCY DECLARATION

Issue: The SRF Commander's request to the local authorities for a declaration of an emergency took several days to be approved and was implemented after most of the problems with evacuations were over.

Discussion: The SRF experienced continuing problems with local residents not complying with the voluntary evacuation of their neighborhoods. Since neither the SRF Commander nor the

local police had the authority to enforce the evacuation, this created a safety problem that slowed and occasionally caused removal operations to cease. The local officials also took several days to approve the SRF Commander's request.

Recommendation: The SRF Commander should request a limited state of emergency at the beginning of or, if possible, before the operational phase to allow time for the local officials to review and approve the request. The limited state of emergency would prevent some of these problems from arising during removal operations.

C. EARLY COORDINATION

Issue: There were too many levels of higher headquarters trying to direct operations at the SRF level.

Discussion: During Operation Safe Removal, coordination and taskings with the Department of the Army's Army Operations Center worked well. At the same time, some SRF staff elements experienced occasional problems trying to convince AMC staffers of the urgency of various actions required to support the SRF. Since AMC was working several international and national logistics problems at the same time, it was difficult to make the SRF the highest priority.

Recommendation: For smooth SRF operations, it is essential that a single agency be in charge. This should be coordinated with all pertinent levels of the Department of the Army prior to the activation of the SRF. Open and efficient communication between the Army Operations Center and AMC should be established at the onset of the operation.

D. REGULATORY APPROVAL FOR SHIPMENTS OF RECOVERED MUNITIONS

Issue: The SRF Commander did not have authority to transport munitions. Despite the risk munitions presented to the heavily populated neighborhood, the SRF Commander had to obtain concurrence from multiple agencies before flights could begin. Fortunately, none of the munitions were leaking.

Discussion: Although the Health and Human Services representative at the Center for Disease Control in Atlanta was quick to evaluate the SRF transportation plan, many hours could have been lost during communication and coordination. Due to layers of bureaucracy and numerous environmental laws, the SRF Commander did not have the authority for immediately shipping recovered chemical munitions from the incident site to reduce the risk to the surrounding community. In addition, the Commander could not take advantage of ideal flying weather which increased the risk to the crews and to the civilian communities along the route.

Recommendation: A programmatic environmental impact statement should be prepared and coordinated with regulatory agencies.

Blanket approval should be obtained for the SRF Commander to use discretion on matters concerning the timing and conveyance of munitions after they have been recovered. The Commander would be entrusted to determine the safest method and route for shipment of the recovered munitions to storage or destruction sites. This decision would be made within all safety guidelines of the Department of Health and Human Services, the Department of Transportation, and the Department of Defense under the emergency circumstances. This pre-incident approval would increase the safety of SRF personnel, speed up the operation, and decrease the dangers to the surrounding community.

E. REGULATORY APPROVAL FOR STORAGE OF RECOVERED MUNITIONS

Issue: Serious reluctance was encountered during efforts to find suitable sites for the storage of munitions after recovery.

Discussion: Although state officials of Arkansas, Maryland, and Virginia agreed to accept recovered munitions, they were highly reluctant to do so because of a commendable concern on behalf of their constituencies.

Recommendation: The programmatic environmental impact statement should also include the destinations at which the Army intends to store recovered munitions prior to disposal. Blanket approval should be obtained for the SRF Commander to use discretion in selecting the destination. The Commander would be entrusted to assess risk to the communities en route as well as to communities surrounding potential destinations.

F. SECURITY OF RECOVERED MUNITIONS

Issue: Current Army regulations require excessive levels of security inappropriate for World War I recovered munitions.

Discussion: Current Army regulations have the same security requirements for old recovered munitions as they do for the storage of current stockpile munitions. Most recovered munitions are of no use to the U.S. Army or to terrorists who could fabricate their own chemical munitions far quicker. Rusty, archaic munitions do not require the normal fences, intrusion detection systems, and guard forces required of stockpile munitions. Instead, security should focus only on assuring that such items will not be mishandled inadvertently.

Recommendation: The Department of the Army should change current regulations to acknowledge that recovered chemical munitions do not warrant the same stringent security precautions appropriate for stockpile munitions.

G. DISPOSAL OF CONTAMINATED SOIL

Issue: If massive soil contamination had occurred during recovery operations at Spring Valley, there would have been a major disposal problem. Fortunately, no munitions were leaking.

Discussion: The Army may not be as fortunate in the future. Burial pits can be expected to contain leaking munitions and the excavation of contaminated soil will be necessary. Small volumes of soil could be decontaminated on-site and packaged for transport to approved destinations. Large volumes of soil would present a major management challenge.

Recommendations: A treatment, packaging, transport, storage and/or disposal plan should be developed for the management of contaminated soil which is excavated during recovery operations. The resulting plan should also be coordinated with the appropriate regulatory agencies beforehand.

H. CRITERIA FOR TERMINATION OF EMERGENCY PHASE

Issue: The SRF Commander developed the criteria used to terminate the emergency phase. Due to conflicting interests involving allocation of time and resources, standardized termination criteria is required prior to operations. Fortunately, the Spring Valley criteria were accepted by the authorities involved.

Discussion: Even though every emergency will be different, common criteria are needed to clearly define the transition point at which the short-term emergency phase ends and the long-term remediation phase begins. At stake is the prolonged commitment of emergency Army resources which should be released at the earliest moment to assure their availability for emergency deployment elsewhere. Particularly significant is the fact that regulatory agencies do not have separate criteria for "emergency phase" in the context of Spring Valley.

Recommendation: A standard criteria should be developed which clearly defines the point at which responsibility is passed from the SRF to the agency which will manage the remediation phase (in this case, the Corps of Engineers).

I. COMMUNICATIONS (WITH AIRCRAFT)

Issue: The SRF did not have an in-house capability to communicate with military aircraft.

Discussion: The SRF Operations Center had to rely on personnel from the Federal Emergency Management Agency (FEMA) to communicate with the military aircraft supporting transportation operations. This caused unnecessary communication delays and problems, and was not always responsive to the SRF needs.

Recommendation: The SRF should have on-site access to an AN/VRC-46 radio with an AC/DC power converter for any future operation requiring air transport coordination. A commercial multiband UHF radio would be an alternate. Possessing this radio would allow for the elimination of a middleman between the action officer and the aircraft.

J. COMMUNICATIONS (OVERALL)

Issue: The SRF did not initially have adequate communication equipment on-site.

Discussion: Communications during the SRF operations were critical to the success of the operation and should have been available from the start. A Mobile Air Transportable Telephone System (MATTS) would provide for complete telephone, VHF, and UHF capability and would meet expanding requirements for communications. The Federal Emergency Management Agency supplied a MATTS one week after the start of Operation Safe Removal.

Recommendation: AMC should address the requirement for a MATTS in the Service Response Force Plan. This would ensure the MATTS was deployed more timely.

K. DAILY FUEL REQUIREMENTS

Issue: SRF vehicles and equipment were not always refueled timely which delayed operations.

Discussion: SRF operations required the support of several vehicles and pieces of equipment that consumed fuel. Delays in obtaining fuel caused a similar delay in operations. A predetermined refueling plan would have alleviated this problem.

Recommendations: AMC should address the issue of required daily refueling in the SRF Plan to include responsibility and estimated amounts. The Plan should also address the issue of refueling in non-urban areas where fuel sources may be a problem. In urban areas, there should be appropriate planning with local officials to ensure an adequate and timely fuel supply.

L. EMERGENCY DEMOLITION PERMITS

Issue: The SRF was only able to obtain emergency demolition permits for high explosive (HE) and white phosphorus (WP) rounds.

Discussion: Two additional types of rounds were recommended by the TEU Commander for emergency demolition. These were smoke rounds and nearly empty chemical rounds. The SRF was unable to obtain emergency demolition permits for these rounds due to environmental concerns of state and local officials.

Recommendations:

1. The Department of the Army should plan in advance with state and local officials concerning which munitions could be disposed of through demolition on various regional Army installations. This would allow quicker approval for emergency permits.

2. The SRF should generate a list of potential munition fillings as early as possible during the operation. This list should then be used by the SRF to coordinate emergency demolition permits with the state and local officials. In theory, it should be easier to obtain approval for the destruction of more fillings initially than having to add fillings later in the operation. Unnecessary items could easily be subtracted from the permit as operations develop.

M. LEGAL SUPPORT

Issue: The discovery and recovery of buried chemical munitions in a prominent urban area created numerous legal issues.

Discussion: There were a variety of legal issues involved in the SRF operations. These issues included everything from environmental laws to coordinating the room tax exemption with local hotels. Two Army lawyers on-site full time were barely able to meet the workload, yet made important contributions to accomplishing the mission.

Recommendation: The SRF Plan and exercises should ensure proper representation of lawyers knowledgeable about such topics as environmental laws, chemical demilitarization issues, criminal law, and claims against the Federal Government.

N. MEDICAL SUPPORT

Issue: Extensive medical evacuation support planning was required for SRF operations.

Discussion: Although no SRF personnel were seriously injured during operations, medical evacuation at the site was readily available. Future operations not on or near a military installation or in an urban area may not have the evacuation and clinical assets readily available in a major urban area. Ambulance support and a treatment facility may have to be moved to the site.

Recommendation: AMC should modify the SRF Plan to add proper medical evacuation and clinical assets no matter where the SRF is operating.

O. SRF PERSONNEL TRAINING

Issue: Some of the key staff members had never been trained for SRF operations.

Discussion: Some of the key staff positions listed in the SRF Plan had no SRF trained personnel available to staff the position. This was an apparent oversight of previous SRF exercises. Although the personnel who were deployed to the positions did a superb job, advanced training would have helped them be better prepared for the challenges.

Recommendation: All SRF positions should have multiple personnel SRF trained in the event of activation. This would also assist locating replacements in case of emergency or unavailability of the first choice.

3. PUBLIC AFFAIRS:

A. OPEN COMMUNICATION WITH THE PUBLIC

Issue: Open communication between the SRF and the local residents proved a key factor in the success of the operation.

Discussion: The SRF quickly won the confidence of the community and credibility for the clean-up effort by opening direct lines of communication with the local residents. The SRF Commander initiated nightly "town hall" meetings, capsulizing events of the day and encouraging two-way dialogue. The SRF established a "fax network" of residents who were sent copies of all information updates and media releases. The SRF set up an information table and bulletin board at a local community center and established a special citizens' telephone hot line to address all questions and concerns.

Recommendation: AMC should modify the SRF Plan to incorporate the actions of the Public Affairs staff for Operation Safe Removal as standard operating procedure for future SRF incidents.

B. INFORMATION FLOW

Issue: The SRF Commander notified the local residents of events and information prior to notifying the news media.

Discussion: The normal public affairs information flow is from the media to the general public. The SRF broke with tradition by channeling information to residents first, and then to the media. The media also did not receive any information that was not first provided to the residents. This was very much appreciated by the local residents impacted by removal operations.

Recommendation: AMC should modify the SRF Plan to incorporate this flow of information as standard operating procedure for future SRF incidents.

C. MEDIA COVERAGE

Issue: The news media demanded access to the community meetings intended for local residents only.

Discussion: Due to strong media interest in the community meetings, new ground rules were established for media coverage of the meetings hosted by the SRF Commander. The media were permitted to sit in on the meetings, but were barred from having still or video cameras during the meeting. Media representatives reluctantly agreed to this arrangement since their reporters were permitted access to all information. Following each meeting, the SRF Commander offered the media a photo opportunity with on-camera questions and answers based on information disseminated at the meeting. This arrangement permitted a free-flow discussion without inhibition or threatening environments sometimes created by TV cameras.

Recommendation: AMC should modify the SRF Plan to incorporate this media coverage plan as standard operating procedure for future SRF incidents.

D. BAD NEWS INFORMATION SESSIONS

Issue: Bad news related to an individual's residence or several residences required special handling.

Discussion: The SRF occasionally had to report potentially bad news to individual residents concerning the results of magnetometer sweeps or munition discoveries. The SRF conducted these bad news sessions with the affected residents prior to the nightly town hall meetings. This won the confidence and appreciation of those adversely impacted by the day's events.

Recommendation: AMC should modify the SRF Plan to incorporate this briefing procedure as standard operating procedure for future SRF incidents.

E. PUBLIC EDUCATION REQUIREMENTS

Issue: The general public had little if any understanding of chemical munitions, SRF operations, or what a FUDS was.

Discussion: The education of the general public concerning the activities of the SRF, the historical intelligence, and munitions configurations was a major challenge. To meet this challenge, the SRF disseminated Fact Sheets on chemical munitions, history of the site, hazard analysis, and other pertinent information. These were greatly appreciated by the public.

Recommendations:

1. AMC should modify the SRF Plan to incorporate this public education procedure as standard operating procedure for future SRF incidents.
2. AMC should ensure that Fact Sheets on pertinent topics are prepared in advance of a crisis to ensure accuracy, clearance for public release, and presentation are adequate for high level media and public interest.

F. JOINT INFORMATION CENTER

Issue: The Joint Information Center (JIC) concept was not workable during Operation Safe Removal.

Discussion: The JIC concept as currently planned under the SRF Plan was not workable due to the unique requirements of a chemical FUDS in an urban area. Four major television and three major radio stations were all located within one mile of the site.

Recommendation: AMC should modify the SRF Plan to reflect that the JIC is not practical at FUDS or chemical storage sites.

G. RESTRICTED AIR SPACE

Issue: News media helicopters posed a hazard to SRF operations during the initial phase of Operation Safe Removal.

Discussion: Restricted air space over the work site was not declared immediately after the start of operations. This allowed media helicopters unrestricted access and created potentially dangerous interference and distractions to SRF personnel and with SRF flight operations.

Recommendation: Restricted air space should be announced immediately at the site as soon as the emergency becomes known.

4. EXCAVATION OPERATIONS:

A. CHEMICAL AGENT DETECTORS

Issue: TEU personnel did not have adequate detectors readily available for the monitoring of low-level obsolete World War I era chemical agents.

Discussion: TEU operations frequently require handling munitions filled with agents such as: Lewisite (L), phosgene (CG), cyanogen chloride (CK), hydrogen cyanide (AC), and numerous other obsolete and commercial chemicals. TEU personnel require accurate monitors, detectors, and alarms for these agents and chemicals to

ensure the safety of removal operations. TEU monitoring capability included the M18A1 Chemical Agent Alarm, the Chemical Agent Monitor (CAM), and the Viking Gas Chromatograph/Mass Spectrometer (GC/MS). These detectors were not adequate to accurately monitor low level arrays of chemicals which could potentially be found at the site. A real time analysis platform, continuous oxygen and lower explosive level sensing meters, carbon monoxide monitors, Draeger detector tubes, and a non-intrusive analysis capability for munitions is needed for future operations.

Recommendation: AMC should allocate TEU the necessary funds to purchase the best monitoring equipment available for the detection of all potential military and commercial agents at any level. This would provide the SRF with better protection for both the SRF personnel and the surrounding communities.

B. MOBILE CHANGEHOUSE

Issue: TEU personnel did not have adequate facilities for changing into protective equipment, securing personnel clothing, and showering after operations.

Discussion: Department of the Army Pamphlet 385-61, paragraph 7-3a states that personnel who work in contaminated or suspected contaminated areas, or where handling or contact with agent filled items is involved, will change all clothing including shoes at the beginning and ending of the work shift. Each worker is also required to shower thoroughly before leaving at the end of the workday. There were no facilities on-site to meet this requirement other than emergency decontamination equipment which was not very suitable in freezing temperatures, unsecured areas, and within sight of the media.

Recommendation: AMC should allocate funds for TEU to purchase a mobile changehouse equipped with lockers, a shower with hot and cold running water, toilet, and other facilities required to meet the regulatory requirement. This would increase not only the safety of the SRF personnel, but also the morale of the personnel forced to perform removal operations for several weeks.

C. ON-SITE DETONATION OF MUNITIONS

Issue: The SRF Plan did not address the problem of having to destroy a fuzed, armed chemical munition in an urban area.

Discussion: Although no suspect fuzed armed munitions were found, the problem of having to destroy a chemical round in the middle of an urban area should be addressed by the SRF Plan in the event that the next incident requires such action. The SRF was not prepared or equipped for such a contingency.

Recommendation: AMC should expand the SRF Plan to include scenarios that require on-site detonation of chemical munitions. Additional analysis should include quantitative risk assessments

that address both explosive and health risks associated with the destruction of chemical munitions on-site. The SRF should also have access to the proper equipment and operating procedures in case the requirement occurs.

D. LOGISTICAL SUPPORT

Issue: There was insufficient logistical support for the SRF.

Discussion: There was a lack of established logistical support to deal with TEU operational requirements and the SRF staff. This situation forced the TEU Supply Officer (S4) to support both the operational and the support elements with clothing, equipment, and expendables. Since the S4 was not staffed or prepared to support such a large number of personnel, this created problems in supporting the primary TEU operations.

Recommendations:

1. AMC should expand the SRF Plan to include complete on-site logistical support for the SRF Commander, staff, operations, and support personnel.
2. CBDA should plan and organize its own supply section to fully support its staff when conducting field operations.

E. COMMERCIAL PURCHASING AUTHORITY

Issue: The SRF lacked personnel on-site with commercial purchasing authority.

Discussion: The needs of the mission frequently demanded immediate attention and expedited processing of purchase orders to prevent shut down of operations. This mandated the TEU S4 leaving the site to procure the supplies and removing him from supporting ongoing operations.

Recommendation: AMC should add adequate personnel to the SRF Plan to cover all possible requirements for direct commercial purchasing authority to support all SRF personnel.

5. SUPPORT OPERATIONS:

A. OFFICE SPACE FOR SRF PERSONNEL

Issue: The SRF experienced significant problems attempting to find adequate office space for the SRF personnel during the initial deployment of the SRF.

Discussion: Initially, the SRF staff had to use any available vehicle on-site for meetings and as a place to work protected from the rain and cold. This created security and safety problems

considering the number of non-Army personnel wandering around the site. The eventual use of a partially constructed house as a headquarters proved extremely fortunate, but not something that can be counted on in future operations. On-site office space for the SRF staff requires extensive space and equipment that should be coordinated and planned for prior to deployment.

Recommendation: AMC should expand the SRF Plan to include the establishment of a SRF Operations Center immediately upon the activation of the SRF. This facility should be adequate for the entire SRF staff and have all the necessary equipment. It should also be within walking distance of the operations site due to the need for the staff to work with the personnel conducting actual removal operations.

B. QUARTERS FOR SRF PERSONNEL

Issue: The SRF experienced problems attempting to find adequate quarters for the entire SRF staff for the duration of the operation.

Discussion: Initially, the SRF personnel made their own arrangements as to hotels and quarters. Once the SRF was fully staffed, the Headquarters Commandant coordinated hotel rooms. Halfway through the operations, the SRF had to vacate their hotels due to the Presidential inauguration. Later, prearranged hotel reservations required the shifting of personnel from one hotel to another. Some military personnel were not quartered in hotels and others were quartered in first rate hotels, creating questions of favoritism (although that was not the case). Civilian workers required individual hotel rooms and would not stay in unofficial locations like school barracks or residents' homes (considered at one time as an emergency contingency). Other considerations for adequate housing included the time it took for transportation from the quarters to the work site and the availability of mass transportation. Although the SRF Headquarters Commandant did a superior job handling the logistics of these problems, advanced planning would have alleviated many of his problems. Future operations may be located in areas with very limited or no hotels available.

Recommendation: AMC should modify the SRF Plan to address the issue of adequate quarters for all military and civilian personnel intended to join the SRF operations.

D. TRAVEL ORDERS

Issue: SRF personnel were issued travel orders that required several changes, amendments, and reissue.

Discussion: As SRF personnel were deployed, each individual or group were issued travel orders that did not always cover all contingencies and requirements. In addition, there were questions of who was authorized a rental car, an on-site POV, and how long

of a duration to make the travel orders. Some individuals experienced delays obtaining travel orders, cash advances, and signatures on the orders.

Recommendation: AMC should modify the SRF Plan to include a Travel Coordinator and standard travel request formats that address the specific requirements of each position in the SRF. The Travel Coordinator would coordinate fund citations, projected length of time at the site, and special requirements for each SRF member. In addition, the Coordinator would expedite travel orders for SRF members called up as needed. The standard travel request would allow mass processing of 200+ travel requests on an emergency basis and would be prepared in advance of a crisis.

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APPENDIX B

CATALOG OF OPERATION SAFE REMOVAL DOCUMENTS AND REPORTS

VOLUME I

OFFICE OF THE COMMANDER:

References (not included):

U.S. Army Materiel Command, "Chemical Service Response Force Commander's Emergency Response Plan," Revised Draft, April 1991.

Department of the Army Pamphlet 50-6, "Chemical Accident or Incident Response and Assistance (CAIRA) Operations," 17 May 1991.

Marguerite E. Brooks, et al, "Operation Safe Removal: Spring Valley, Washington, D.C., Analytical Results: January - February 1993, (ERDEC-SP-008), July 1993

Organization Charts:

SRF Organization Chart (distributed 15 Jan 93)

SRF Organization Chart (distributed 16 Jan 93)

SRF Organization Chart (distributed 25 Jan 93)

Situation Reports (SITREPS):

8 Jan 93	19 Jan 93	27 Jan 93
10 Jan 93	20 Jan 93	28 Jan 93
11 Jan 93	21 Jan 93	29 Jan 93
12 Jan 93	22 Jan 93	30 Jan 93
13 Jan 93	23 Jan 93	1 Feb 93
14 Jan 93	24 Jan 93	2 Feb 93
15 Jan 93	25 Jan 93	
16 Jan 93	26 Jan 93	

Spot Report, 29 Jan 93

Operation Home Alone (CPT Ross) SITREPS and Instructions:

**16 Jan 93
18 Jan 93
19 Jan 93
20 Jan 93**

Operation Home Alone Staff Duty Instructions

Correspondence:

Message, Department of the Army (DA), Washington, DC (DAMO-ODO-CAT) to Headquarters (HQ), U.S. Army Materiel Command (AMC) et al, subj: Chemical Event Warning Order, 6 Jan 93

Message, DA, Washington, DC (DAMO-ODO-CAT) to HQ AMC et al, subj: Chemical Event Tasking Order, 6 Jan 93

Message, Commander, AMC to DA, Washington, DC (DAMO-ODO-CAT) et al, subj: Chemical Event Warning Order, 6 Jan 93

Message, Commander, AMC to Commander, CBDA, subj: Chemical Event Warning Order, 6 Jan 93

Memorandum for Record, M. Parker, subj: MG Wilson, undated

Message, DA, Washington, DC (DAMO-ZA) to Commander, AMC, subj: Appointment As On Scene Commander (OSC), 7 Jan 93

Message, Commander, AMC to Commander, CBDA, subj: Designation of Service Response Force Commander/On Scene Coordinator, 7 Jan 93

Draft Operation Plan, HQ, CBDA, 7 Jan 93

Chemical Incident Report (1st Draft), 7 Jan 93

Chemical Incident Report (2nd Draft), 7 Jan 93

Message, SRF/OSC to HQDA et al, subj: Chemical Event Report, 8 Jan 93

Memorandum for BG Friel, from John E. Rankin, HQ AMC, subj: Service Response Force (SRF)- Spring Valley, 8 Jan 93

Message, DA, Washington, DC (DAMO-ODO-CAT) to BG Friel, subj: Disposition Instruction for Subject Chemical Munitions, 8 Jan 93

Message, DA, Washington, DC (DAMO-ODO-CAT) to Commander, CBDA, subj: Disposition Instruction for Suspect Chemical Munitions, 8 Jan 93

Message, LTC Coleman to COL Read, SRF, subj: Homeowner Meeting Regarding Chemical Event, 8 Jan 93

Message, MG Heldstab (DAMO-ODO-CAT) to Secretary of the Army et al, subj: Chemical Event Vicinity American University, 8 Jan 93

Itinerary for the Honorable Susan Livingstone, Assistant Secretary of the Army, 8 Jan 93

Memorandum, LTC Coleman (DAMO-ODO-CAT) to BG Friel, subj: Bunker Brief, 8 Jan 93

Memorandum, BG Friel, subj: Operation Safe Removal, 9 Jan 93

Message, DA, Washington, DC (DAMO-ODO-CAT) to BG Friel, subj: Chemical Event Report Follow-up, 9 Jan 93

Message, DA, Washington, DC (DAMO-ODO) to Commander, FORSCOM, subj: Decontamination Support for Chemical Incident, 11 Jan 93

Message, DA Washington DC (DAMO-ODO) to Commander, FORSCOM, subj: Decontamination Support for Chemical Incident, 11 Jan 93 [CBDA copy]

Message, Commander, XVIII Airborne Corps to Commander, 1st COSCOM, subj: Decontamination Support for Chemical Incident, 11 Jan 93

Message, DA, Washington, DC (DAMO-ODO-CAT) to Commander, AMC, subj: Tasking for Deputy on Scene Coordinator, 11 Jan 93

Message, F. Prescott Ward to S. W. Schultz, subj: Resend DC Results, 11 Jan 93

Memorandum for On-Scene Commander for Operation Safe Removal, from Wendell L. Fortner, Pine Bluff Arsenal, subj: Permit Modification at Pine Bluff Arsenal, 12 Jan 93

Message, DA, Washington, DC (DAMO-ODO-CAT) to Commander, HSC, Fort Sam Houston, TX, subj: Support For Chemical Incident, 12 Jan 93

Message, DA, Washington, DC (DAMO-ODO-CAT) to Commander, FORSCOM, FT McPherson, GA, subj: Aviation Support for Chemical Incident, 12 Jan 93

Point Paper, MAJ Agogino, subj: Operation Safe Removal, 13 Jan 93

Message, DA, Washington, DC (DAMO-ODO-CAT) to Commander, AMC, subj: Chemical Munitions Handling Warning Order, 13 Jan 93

Memorandum for Record, BG Friel, subj: Transportation Plan - Liquid Filled Rounds, 13 Jan 93

Point Paper, Doug Koger, subj: Operation Safe Removal, 14 Jan 93

Message, Commander, SRF to Pine Bluff, AR, subj: Notification of Intent to Conduct an Emergency Shipment, 14 Jan 93

Message, Commander, FORSCOM, Fort McPherson, GA to Commander, III Corps, Fort Hood, TX, subj: Aviation Support for Chemical Incident, 14 Jan 93

Memorandum, from BG Friel, subj: Verification Plan for Termination of the Emergency Response Phase, 14 Jan 93

Letter, Vernon N. Houk, National Center for Environmental Health to BG Busbee, USACMDA, 14 Jan 93

Memorandum for Director of Operations, ODSCOPS, from BG Friel, subj: Schedules for Operation Safe Removal, 14 Jan 93

Message, DA, Washington, DC (DAMO-ODZ) to BG Friel, subj: Chemical Event Phase I (Emergency Response) Transition Criteria, 15 Jan 93

Message, DA, Washington, DC (DAMO-ODZ) to BG Friel, subj: Chemical Event Phase I (Emergency Response) Transition Criteria, 15 Jan 93 [CBDA copy]

Message, DA, Washington, DC (DAMO-ODO-CAT) to Commander, FORSCOM, Fort McPherson, GA, subj: Demolition Support for Chemical Event Washington, DC, 15 Jan 93

Memorandum, from BG Friel, subj: Transportation and Sampling Plan - Liquid Filled Rounds for Sampling at the Edgewood RD&E Center, Edgewood Area, APG, MD, 15 Jan 93

Memorandum for Record, BG Friel, subj: Transportation Plan - Solid Filled Rounds, 15 Jan 93

Memorandum for National Response Center, from BG Friel, subj: Operation Safe Removal Update, 16 Jan 93

**Message, SRF-OPS, to Commander, CBDA, et al, subj:
Notification of Intent to Conduct Emergency
Shipment, 16 Jan 93**

**Memorandum for Record, Jim Bacon, subj: [SRF Commander
Aware of Provisions of 40CRF261], 16 Jan 93**

**Message, Commander, Pine Bluff Arsenal, AR, to BG Friel,
subj: Report of Arrival, CBDA #93-01, 20 Jan 93**

Letter, from GEN Ross to BG Friel, 22 Jan 93

**Memorandum for Record, BG Friel, subj: Evacuation for
OSR, Spring Valley, 23 Jan 93**

Letter, BG Friel to Mayor Sharon Pratt-Kelly, 23 Jan 93

**Message, SRF-OPS to Commander, SRF, et al, subj:
Notification of Intent to Conduct An Emergency
Shipment, 23 Jan 93**

**Memorandum, BG Friel, subj: Soil Sampling Plan, 25 Jan
93 and Amendment B, 28 Jan 93**

**Memorandum from BG Friel, subj: Transportation Plan -
Liquid Filled Rounds, 25 Jan 93 [supercedes plan
dated 15 Jan 93]**

**Decision Paper, BG Friel, subj: [Risk Assessment Safety
Precautions], 26 Jan 93 with enclosures**

**Memorandum from BG Friel, subj: Transportation Plan -
Solid Filled Rounds, 26 Jan 93 [supercedes plan
dated 15 Jan 93]**

**Memorandum for Record, from BG Friel, subj: Supplemental
Information for the Permit for Destruction of HE
and WP Rounds at Ft. AP Hill, 26 Jan 93**

**Memorandum for Record, from BG Friel, subj: Supplemental
Information (2) for the Permit for Destruction of
HE and WP Rounds at Ft. AP Hill, 26 Jan 93**

**Memorandum for Record, from BG Friel, subj: Soil
Sampling Plan for Ft. A.P. Hill OD Range, undated**

**Memorandum for Operation Safe Removal Staff, from
BG Friel, subj: SRF at the Spring Valley Recovery
Site (Operation Safe Removal), Commander's Policy
(Rules of Engagement), 27 Jan 93**

**Memorandum for Commander, AMC (AMCPE-P), from BG Friel,
subj: Request for Approval of Actual Expense
Authorization, 27 Jan 93**

**Memorandum for the Special Assistant to the Secretary
and Deputy Secretary of Defense, from Michael W.
Owen, Acting Assistant Secretary of the Army, subj:
Spring Valley/American University Recovery, 27 Jan
92**

**Message, BG Friel to Director, ERDEC, APG, MD, subj:
Notification of Intent to Conduct an Emergency
Shipment, CBDA #93-04, 28 Jan 93 and corrected
copy**

**Message, BG Friel to Director, ERDEC, APG, MD, subj:
Notification of Intent to Conduct an Emergency
Shipment, CBDA #93-05, 28 Jan 93 and corrected
copy**

**Memorandum for SRF Spring Valley Forces, from COL Read,
subj: Mission Termination/Site Closure, 28 Jan 93**

**Memorandum for SRF/OSC Staff, from Jim Bacon, subj:
Phase I/Phase II Transition Planning Meeting,
28 Jan 93**

**Message, BG Friel to Director, ERDEC, APG, MD, subj:
Notification of Intent to Conduct an Emergency
Shipment, CBDA #93-04, Supplemental Information,
29 Jan 93**

**Message, BG Friel to Director, ERDEC, APG, MD, subj:
Notification of Intent to Conduct an Emergency
Shipment, CBDA #93-05, Supplemental Information,
29 Jan 93**

**Letter, BG Friel to Spouses of OSR Participants, 29 Jan
93 (sample)**

**Memorandum for Record, from BG Friel, subj: Backfill of
Pits, 30 Jan 93**

**Letter, BG Friel to John E. Ely, Virginia Department of
Waste Management, 1 Feb 93 with enclosure**

**Message, Commander, Pine Bluff Arsenal to BG Friel,
subj: Report of Arrival, CBDA #93-03, 2 Feb 93**

**Message, DA, Washington, DC (DAMO-ODO-CAT) to BG Friel,
subj: Completion of Phase I (Emergency Response)
Operation Safe Removal, Spring Valley, Washington,
DC, 2 Feb 93**

**Memorandum for National Response Center and U.S.
Environmental Protection Agency, from BG Friel,
subj: Selection of Response Action, 2 Feb 93
(with enclosures)**

**Message, BG Friel to HQDA, Washington, DC, subj:
Chemical Event Report, 8 Feb 93**

**Message, Marguerite E. Brooks to BG Friel, subj:
Spring Valley Report, 1 Mar 93**

**Memorandum for Distribution, BG Friel, subj: Spring
Valley Recognition and Compensation, 23 Jun 93**

VOLUME II

SPECIAL STAFF:

Director of the Special Staff:

**After Action Report, COL Charles B. Kenison, with the
following enclosures:**

**Memorandum for Record, from BG Friel, subj: Verification
Plan for Termination of the Emergency Response
Phase, 14 Jan 93**

Daily Plan Chronology of the Special Staff

**Memorandum for Record, subj: Major Delays in Shipping
the Munitions from the Site**

**Memorandum for Record, subj: Current Storage
Installation May Become Unacceptable to Arkansas**

**Equipment for the Director of the Special Staff and
His Staff, In General**

**Equipment to be Brought by the Director of the Special
Staff for Himself**

**Memorandum for DAMO-SWS, from COL Charles B. Kenison,
subj: Initial Results of Sampling - WWI Munitions
from Spring Valley, 4 Feb 93**

Environmental:

**After Action Report, Teresa M. Mann, 2 Feb 93, with the
following enclosures:**

EPA Notification of Regulated Waste Activity Form

Memorandum for Record, subj: Disposition of Suspect Agent Filled Rounds

Memorandum for On-Scene Commander for Operation Safe Removal, from Wendell L. Fortner, Pine Bluff Arsenal, subj: Permit Modification at Pine Bluff Arsenal, 12 Jan 93

Letter, Vicky Prewett, State Of Arkansas Department of Pollution Control and Ecology to Pine Bluff Arsenal, 11 Jan 93

Arkansas Department of Pollution Control and Ecology Hazardous Waste Transportation Permit

Letter, Phillip Murphy, State of Arkansas Department of Pollution Control and Ecology to Wenda Fortner, Environmental Coordinator, Pine Bluff Arsenal, 12 Jan 93

State of Arkansas Uniform Hazardous Waste Manifest, AR-611927

State of Arkansas Uniform Hazardous Waste Manifest, AR-611920

State of Arkansas Uniform Hazardous Waste Manifest, AR-611921

Memorandum for Record, subj: Disposition of Solid Filled, Suspect HE Rounds

Letter, Garwin W. Eng, Commonwealth of Virginia, Department of Waste Management to Terry Banks, Fort A.P. Hill, subj: Temporary Emergency Permit, 20 Jan 93

Hazardous Waste Management Program Temporary Emergency Permit to Treat Hazardous Wastes, 20 Jan 93

Map, Fort A.P. Hill Demolition Site Location

Memorandum for Unit Personnel, from CPT John T. Dluzak, 67th EOD, subj: Standard Operating Procedures (Emergency Destruction Operation), 12 Jan 93

Information Paper, subj: Spring Valley Munitions Recovery, 16 Jan 93

Memorandum for Record, from BG Friel, subj: Supplemental Information for the Permit for Demolition of HE and WP Rounds at Ft. AP Hill

Memorandum for Record, from BG Friel, subj: Supplemental Information (2) for the Permit for Destruction of HE and WP Rounds at Ft. AP Hill

Letter, John E. Ely, Commonwealth of Virginia, Department of Waste Management to Terry Banks, Fort A.P. Hill, subj: Temporary Emergency Permit

Memorandum for Record, from BG Friel, subj: Soil Sampling Plan for Ft. A.P. Hill OD Range

Memorandum for Record, from 2LT Martin J. Weber, TEU, subj: A.P. Hill Demolition Operations AAR, 27 Jan 93

Memorandum for Record, from Teresa Mann, subj: Detonation at Ft AP Hill, 27 Jan 93

Memorandum for Record, from Teresa Mann, subj: Sampling After Detonation of 8 Rounds at Ft AP Hill

Spring Valley Soil Samples Analysis Results for Mustard (HD) and Arsenic, 28 Jan 93

Letter, BG Friel to John E. Ely, Office of Compliance and Enforcement, Virginia Department of Waste Management, 29 Jan 93 (with enclosures)

Note, Rounds to be Destroyed at Ft AP Hill

Memorandum for Record, from LTC William T. Batt, subj: A.P. Hill Demolition Operations AAR, 30 Jan 93

Letter, BG Friel to John E. Ely, Office of Compliance and Enforcement, Virginia Department of Waste Management, 1 Feb 93

Uniform Hazardous Waste Manifest, 27 Jan 93

Land Disposal Restriction Notification/Certification, 27 Jan 93

Uniform Hazardous Waste Manifest, 30 Jan 93

Land Disposal Restriction Notification/Certification, 30 Jan 93

Memorandum for Record, subj: Sample Rounds Taken to ERDEC for Drilling, Sampling, and Analysis

Fax Message, BG Friel to Butch Dye or Rick Collins, Maryland Department of the Environment, 15 Jan 93

Memorandum, from BG Friel, subj: Operation Safe Removal

**Memorandum for Record, from Teresa M. Mann, subj:
Rounds to be Sent to ERDEC on 29 Jan 93**

**Memorandum for Record, from Teresa M. Mann, subj:
Shipment of Rounds to ERDEC, 29 Jan 93**

**Memorandum for Record, from Teresa M. Mann, subj: Rounds
to be Sent to ERDEC on 29 Jan 93**

**Memorandum for Record, from Teresa M. Mann, subj: Sixth
Round to ERDEC, 29 Jan 93**

**Memorandum for Record, subj: Plan for Disposal of
Miscellaneous Wastes**

**Memorandum for Record, subj: Plan for Disposal of
Miscellaneous Wastes - Followup, 1 Feb 93**

**Chemical Waste Management, Inc., Waste Profile, 12 Jan
93**

Generator's Certification, 12 Jan 93

State of New York, Hazardous Waste Manifest (2)

Illinois Uniform Hazardous Waste Manifest, 1 Feb 93

**Memorandum for Record, from Teresa Mann, subj: Drum of
Contaminated Soil, 1 Feb 93**

**Message, Marguerite E. Brooks to George Mason, subj:
Analysis of DC Sample, 28 Jan 93**

**Memorandum for Record, from COL Charles B. Kenison,
subj: Soil Sampling Plan to Verify Termination of
the Emergency Response Phase, 27 Jan 93**

**Memorandum for Record, from BG Friel, subj: Soil
Sampling Plan, 25 Jan 93 (with appendices)**

Map, Spring Valley Site Pit and Pile Samples

Map, Spring Valley Site Lateral Contamination Samples

Map, Spring Valley Site Background Samples

**Memorandum for Record, subj: Visit by Maryland
Department of the Environment (MDE) Officials**

**Memorandum for Record, from Teresa M. Mann, subj: Visit
by MDE Officials/Approval to Ship Rounds to ERDEC,
25 Jan 93**

Memorandum for Record, subj: Lessons Learned

Note, List of Equipment Brought to SRF

Memorandum for Record, subj: Points of Contact

Legal:

**After Action Report, LTC Michael K. Millard and
LTC Warren G. Foote, 1 Feb 93, with the following
enclosures:**

**Memorandum for Record, from LTC Foote, subj: Lesson
Learned - Transport and Storage of Recovered
Munitions, 1 Feb 93**

**Memorandum for Record, from LTC Millard and LTC Foote,
subj: Legal Issues List**

**Memorandum for Record, LTC Foote,, subj: Transport
Requirements for Hazardous Waste, 11 Jan 93**

**Memorandum for PM Chem Demil, from LTC Foote, subj:
NEPA Requirements for Spring Valley Remediation,
21 Jan 93**

**Memorandum for Record, LTC Foote, subj: Commanders
Potential for Personal Liability, 22 Jan 93**

**Memorandum for the Record, LTC Foote, subj: May the
PINS be Stored On-site?, 22 Jan 93**

**Memorandum for Record, LTC Millard, subj: Recommended
Reimbursement Procedures, 23 Jan 93**

**Handout, Spring Valley Evacuation, Recommended
Reimbursement Procedures, LTC Millard, 23 Jan 93**

**Memorandum for the Record, LTC Foote, subj: What is the
National Defense Area and is Establishment of a NDA
Appropriate for Operation Safe Removal, 23 Jan 93**

**Memorandum for Record, LTC Foote, subj: Army as the Lead
Agency, 24 Jan 93**

**Memorandum for the Record, LTC Foote, subj: Does 40 CFR
300.800...Apply to the SRF for OSR, 24 Jan 93**

**Memorandum for Record, LTC Millard, subj: Chaplain
Services, 26 Jan 93**

**Memorandum for Record, LTC Foote, subj: Cash Awards for
Dept. of Army Civilians, 28 Jan 93**

Surgeon:

After Action Report, MAJ Robert M. Gum, 2 Feb 93, with the following enclosures:

Annex M, Medical Operations to Safe Removal Plan

Handout, Medical Alert, undated

Information Paper, MAJ Gum, subj: Chemical Agents Identified in the Spring Valley Area

Memorandum for Record, subj: Hydrolysis Products of Suspected Agents in the Spring Valley Residential Area

Memorandum for Record, subj: Medical Contacts - Off Site

Memorandum for Record, subj: Chronology of Medical Improvements with Operation Safe Removal

Memorandum for Record, subj: Medical References

SRF Surgeon Log, MAJ Gum, 9 Jan- 2 Feb 93

Safety:

After Action Report, George Collins and Greg Mason, 3 Feb 93, with the following enclosures:

Memorandum for Record, from BG Friel and LTC William T. Batt, subj: Risk Assessment for Safe Removal of Chemical Filled Unexploded Ordnance at the American University Chemical Warfare Center Site, 11 Jan 93

Decision Paper, from BG Friel and LTC Batt, subj: Based on the Risk Assessment, dated 23 Jan 93, the Following Safety Precautions are Directed to be Implemented

Memorandum for Record, from George Collins and Greg Mason, subj: Revised Risk Assessment for Safe Removal of Chemical Filled Unexploded Ordnance at the American University Chemical Warfare Center Site (Operation Safe Removal), 23 Jan 93

Memorandum for Record, subj: Chronology of Safety Improvements with Operation Safe Removal

Memorandum for Operation Safe Removal Staff, from BG Friel, subj: SRF at the Spring Valley Recovery Site (Operation Safe Removal), Commander's Policy (Rules of Engagement), 27 Jan 93

Safety Office, ERDEC, "Chemicals Known to be Used by American University," 25 Jan 93

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-06) for 75mm, Chemical Projectile, 13 Jan 93

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-07) for Livens Chemical Projectile, 13 Jan 93

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-08) for 4.7-inch, Gun Projectile, Chemical, 13 Jan 93

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-09) for 3.0-inch, Stokes Trench Mortar, HE, Projectile, 13 Jan 93

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-10) for 3.0-inch, Stokes Trench Mortar, Smoke Projectile, 14 Jan 93

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-11) for 75mm, Mk III, HE, Projectile, 14 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-12) for White Phosphorus Igniter, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-14) for 75mm, Common Shrapnel, Mk 1, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-15) for 75mm, Common Steel Shell, Mk 1, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-16) for 3-inch Stokes, Trench Burning, Smoke, Projectile, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-17) for 3-inch Steel, Shell, HE, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-18) for 75mm, Experimental Smoke, Projectile, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-19) for 75mm, Common Steel Shell, Mk I, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-20) for Livens Projectile, 25 Jan 93

Memorandums for Record, Gregory Mason and George Collins, subj: Lessons Learned, 24-27 Jan 93

Operation Safe Removal Safety Journal, 11 Jan - 28 Jan 93

Memorandum for Record, subj: List of Equipment to be Provided by SRF

Memorandum for Record, subj: List of Personal Equipment References to be Brought by Safety Consultant

Memorandum for Record, subj: Key Personnel Contacts

Memorandum for Director, Operations, from Gregory Mason, subj: SRC Reuse Policy/Procedures, 25 Jan 93 (with enclosure)

VOLUME III

OPERATIONS:

Director of Operations:

After Action Report, Kenneth R. Boyd, with the following enclosure:

Memorandum for Record, subj: Operations Directorate [List of Personnel and Whether They Completed Their After Action Reports]

**Memorandum for Director of Operations (Ken Boyd), from
Edward L. Parham, [Deputy Surety Officer], subj:
Operation Safe Removal Recommendations, 22 Jan 93**

After Action Report, Robert F. Remus, Jr.

**Memorandum for Regional Director, FEMA Region III, from
Kenneth R. Boyd, subj: Telecommunications Support,
13 Jan 93**

**Memorandum for Boyd and LTC Batt, subj: Issues and
Considerations**

Handout, Net Control Station (call signs)

**Form, OSR Munitions Shipped Off-Site to Date (plastic
covered sheet with information as of 30 Jan 93)
[oversized]**

**Form, OSR Recovered Munitions Status (plastic covered
sheet with information as of 29 Jan 93)
[oversized]**

Hazard Analyst:

After Action Report, Michael M. Myirski

**Memorandum, subj: Downwind Evacuation Options, 11 Jan
93**

**Memorandum, subj: Considerations During a Release to the
Atmosphere, undated**

**Memorandum to CPT Covell, PBA TEU, from Michael Myirski,
subj: Hazard Analysis for OSR at Andrews AFB, 14
Jan 93**

**Memorandum, subj: Potential Airborne Exposure to
Lewisite and Mustard During OSR, 15 Jan 93**

**Memorandum to Bill Kervin, PBA, from Michael Myirski,
subj: RE: Hazard Analysis for OSR at Andrews AFB,
15 Jan 93**

Handout, subj: Hazard Analysis, undated

**Memorandum for A1C Krista Meehan, Detachment 2, 1st
Weather Group, from Michael M. Myirski, subj:
Memorandum of Appreciation, 4 Feb 93**

**Memorandum for A1C Shawn Peno, Detachment 2, 1st
Weather Group, from Michael M. Myirski, subj:
Memorandum of Appreciation, 4 Feb 93**

Transportation:

After Action Report, MAJ Leonard P. Motz

After Action Report, Richard C. Manzke, Chief, Picatinny Flight Detachment

After Action Report, Betty Peterson, with the following enclosures:

Memorandum for Record, from Betty Peterson, subj: Adequacy of Shipments from Spring Valley, 5 Feb 93

Message, William E. Goforth to S.W. Schultz, subj: John L. McNerney: Air Transportability of SRC and SRCXs, 9 Jan 93

Memorandum for BG Friel, from John L. McNerney, Single Round Container Program Manager, subj: Certification of Equivalency, 12 Jan 93

Memorandum for BG Friel, from John L. McNerney, subj: Use of Fluorolube or Alternate Greases on Gaskets and Single Round Container Sealing Surfaces, 13 Jan 93

Facsimile Message to Betty Peterson, from Walter B. Holcombe, 14 Jan 93

Memorandum for Betty Peterson, from David A. Piskorik, Chief, Packaging Office, subj: Packaging Procedures for Non-Standard Items Found Without Packaging, 14 Jan 93

Memorandum for Director, Operations, from John McNerney, subj: SRC Reuse Policy/Procedures, 24 Jan 93

Memorandum for Operations Center (Betty Peterson), from John McNerney, subj: Outloading Requirements for SRCX and SRCXX Containers, 27 Jan 93

Memorandum for Director, Operations, from John McNerney, subj: Cushioning Material, Antistatic, 28 Jan 93

Excerpt, AFR 71-4/TM 38-250, 15 Jan 93

List of Shells, No. 14-19

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-06) for 75mm, Chemical Projectile, 13 Jan 93

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-07) for Livens Chemical Projectile, 13 Jan 93

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-08) for 4.7-inch, Gun Projectile, Chemical, 13 Jan 93

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-09) for 3.0-inch, Stokes Trench Mortar, HE, Projectile, 13 Jan 93

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-10) for 3.0-inch, Stokes Trench Mortar, Smoke Projectile, 14 Jan 93

Memorandum for TEU Commander, from Manual Lopez, ERDEC Safety Manager, subj: Interim Hazard Classification (ERDEC No. 93-11) for 75mm, Mk III, HE, Projectile, 14 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-12) for White Phosphorus Igniter, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-14) for 75mm, Common Shrapnel, Mk 1, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-15) for 75mm, Common Steel Shell, Mk 1, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-16) for 3-inch Stokes, Trench Burning, Smoke, Projectile, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-17) for 3-inch Steel, Shell, HE, 25 Jan 93

Memorandum for TEU Commander, from Carol Eason, ERDEC Safety Engineer, subj: Interim Hazard Classification (ERDEC No. 93-18) for 75mm, Experimental Smoke, Projectile, 25 Jan 93

**Memorandum for TEU Commander, from Carol Eason, ERDEC
Safety Engineer, subj: Interim Hazard
Classification (ERDEC No. 93-19) for 75mm, Common
Steel Shell, Mk I, 25 Jan 93**

**Memorandum for TEU Commander, from Carol Eason, ERDEC
Safety Engineer, subj: Interim Hazard
Classification (ERDEC No. 93-20) for Livens
Projectile, 25 Jan 93**

Diagram, UH-1H Tie Down Plan, Profile View

Diagram, UH-1H Tie Down Plan, Top View

Diagram, T.O. 1C-23A-9, Typical Mission Categories

Diagram, Profile of Fuselage

**Diagram, T.O. 1C-23A-9, Typical Flight Position, Top
View**

**Memorandum for John Colada, Maryland Department of the
Environment, from Betty Peterson, subj: Planned
Flight Paths, 10 Jan 93**

**Message, from Commander, FORSCOM to Commander, III Corps
subj: Aviation Support for Chemical Incident,
14 Jan 93**

**Message, from DA, Washington, DC (DAMO-ODO-CAT) to
Commander, FORSCOM, subj: Aviation Support for
Chemical Incident, 12 Jan 93**

**Message, Commander, AMCCOM (AMSMC-TMJ-A) to Headquarter,
AMC, TACC Scott AFB, IL, subj: SAAM Request 3504,
12 Jan 93**

**Uniform Hazardous Waste Manifest, State of Arkansas,
AR-611927**

**Memorandum for Record, BG Friel, subj: Transportation
Plan - Liquid Filled Rounds, 13 Jan 93**

**DD Forms 1387-2, Special Handling Data/Certification
(10 different items)**

**Message, Betty Peterson to Commander, Pine Bluff
Arsenal, subj: Notification of Intent to Conduct
An Emergency Shipment, 14 Jan 93**

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Memorandum for Record, BG Friel, subj: Transportation and Sampling Plan - Liquid Filled Rounds for Sampling at the Edgewood RD&E Center, Edgewood Area, APG, MD, 15 Jan 93

Message, Betty Peterson to Director, ERDEC, subj: Notification of Intent to Conduct Emergency Shipment, 16 Jan 93

Message, Betty Peterson to Director, ERDEC, subj: Notification of Intent to Conduct an Emergency Shipment, 15 Jan 93 (draft corrected copy)

Memorandum for Record, Jim Bacon, subj: [The SRF Commander is Aware of the Provisions of 40CRF261], 16 Jan 93

Memorandum for Record, subj: Personnel on Helicopter Flight from Spring Valley, Washington, DC, to Ft AP Hill, Bowling Green, VA, 25 Jan 93

Memorandum for Record, BG Friel, subj: Transportation Plan - Solid Filled Rounds, 15 Jan 93

Memorandum for Record, subj: Personnel on Helicopter Flight from Spring Valley, Washington, DC, to Ft AP Hill, Bowling Green, VA, 27 Jan 93

DD Form 1387-2, Special Handling Data/Certification Uniform Hazardous Waste Manifest, 27 Jan 93

Land Disposal Restriction Notification/Certification, 27 Jan 93

Memorandum for Record, BG Friel, subj: Transportation Plan - Solid Filled Rounds, 26 Jan 93

Memorandum for Commander, U.S. Army Garrison, Fort AP Hill, from Kenneth Boyd, subj: Operation Safe Removal, 25 Jan 93

Memorandum for Kenneth Boyd, from G.M. Tribble, Jr., AP Hill, subj: Operation Safe Removal, 25 Jan 93

Message, Betty Peterson to Director, ERDEC, subj: Notification of Intent to Conduct an Emergency Shipment (draft for 2nd shipment to PBA and version sent out by Army Ops)

Message, Betty Peterson to Commander, ERDEC, subj: Delay in Emergency Shipment, 26 Jan 93

**Message, LTC R.C. Edmonds (DANO-SW-CAT) to Director,
ERDEC, subj: Notification of Intent to Conduct
an Emergency Shipment, CBDA #93-03, 27 Jan 93**

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**DD Forms 1387-2, Special Handling Data/Certification
(12 different forms)**

**Memorandum for Record, BG Friel, subj: Transportation
Plan - Liquid Filled Rounds, 25 Jan 93**

**Note, Telecon Between B. Cumnock and MAJ Roff, Provost,
Pine Bluff Arsenal, 26 Jan 93**

**Message, Betty Peterson to Director, ERDEC, subj:
Notification of Intent to Conduct an Emergency
Shipment, CBDA #93-05, 28 Jan 93**

**Message, Betty Peterson to Director, ERDEC, subj:
Notification of Intent to Conduct an Emergency
Shipment, CBDA #93-05, Supplemental Information,
29 Jan 93**

**Memorandum for Commander, USACMDA, from Kenneth Boyd,
subj: Approval of Transportation Plan for Shipment
of Liquid Filled Rounds for Sampling at the
Edgewood RD&E Center, Edgewood Area, APG, MD, dated
15 Jan 93, 28 Jan 93 [with plan enclosure]**

Note, SRC Number and Weight

**Message, Betty Peterson, to Director, ERDEC, subj:
Notification of Intent to Conduct an Emergency
Shipment, CBDA #93-04, 28 Jan 93**

**Message, Betty Peterson to Director, ERDEC, subj:
Notification of Intent to Conduct an Emergency
Shipment, CBDA #93-04; Supplemental Information,
28 Jan 93**

**Memorandum for Commander, USACMDA, from Kenneth Boyd,
subj: Approval of Transportation Plan for Shipment
of Liquid Filled rounds, dated 25 Jan 93, 28 Jan
93**

Note, SRC Number and Packed Weight

Uniform Hazardous Waste Manifest, AR-611921

**Memorandum for Record, subj: Personnel on Helicopter
Flight from Spring Valley, Washington, DC to Ft
AP Hill, Bowling Green, 30 Jan 93**

Memorandum for Record, BG Friel, subj: Transportation Plan - Solid Filled Rounds, 26 Jan 93

Note, AP Hill Shipment List

Uniform Hazardous Waste Manifest, 30 Jan 93

Memorandum for Record, BG Friel, subj: Supplemental Information for the Permit for Destruction of HE and WP Rounds at Ft. AP Hill

Transmission Reports [Fax Cover Sheets with some enclosures]

Memorandum for Record, subj: Supplemental Support Personnel and Agencies

Note, PINS Summary by Item Number, 28 Jan 93

Memorandum for Army Operations Center, Washington, DC, Kenneth Boyd, subj: Alerting Military Response Forces Along Route of Flight, Washington, DC to Pine Bluff, AR, 22 Jan 93

Memorandum, subj: Personnel on Helicopter Flight From Spring Valley, Washington, DC to FT AP Hill, Bowling Green, VA, date of flight 25 Jan 93 (updated version with actual times)

Single Round Container:

After Action Report, John L. McNerney

Memorandum for BG Friel, from John L. McNerney, subj: Use of Fluorolube or Alternate Greases on Gaskets and Single Round Container Sealing Surfaces, 13 Jan 93

Message, Steven W. Schultz to M.A. Pugh, subj: DX Priority - DC Project, 14 Jan 93

Message, from Don Moretz, Engineering Directorate, ERDEC, subj: [Newly Designed SRCX], 14 Jan 93

Message, from Don Moretz, Engineering Directorate, ERDEC, subj: Letter of Instruction for "O-Ring Flange Protector," 15 Jan 93

Memorandum for Director, Operations, from John McNerney, subj: SRC Reuse Policy/Procedures, 24 Jan 93

Memorandum for Record, from Charles K. Dunemann, PBA, subj: SRC Contamination Status, 25 Jan 93

Message, Steven W. Schultz to W.E. Goforth, subj: DC Project, 25 Jan 93

Memorandum for Operations Center, from John McNerney, subj: Outloading Requirements for SRCX and SRCXX Containers, 27 Jan 93

Security:

After Action Report, CPT Christopher Barrett

Sketch of Cul-de-Sac Operations Area

Notes on 75mm Round Recovered from Private Residence

Police Security Requirements for OSR, 12-15 Jan 93

Security Plan for Movement at Andrews AFB, 14 Jan 93

Guard Instructions for the Period 16-21 Jan 93

Construction Work to be Performed, 16-20 Jan 93

Location of Street Blockades, 22-29 Jan 93

Memorandum for Record, from CPT Christopher Barrett, subj: Evacuation Areas, 23 Jan 93

Memorandum for Record, from CPT Christopher Barrett, subj: Evacuation Compliance, 25 Jan 93

Guard Instructions for the Period 30 Jan - 1 Feb 93

Metropolitan Police Support 30 Jan 93 to End Phase I

Handout, Monday Evacuation Areas

Map, Blockade Locations, undated

Map, Blockade Locations, undated

Handout, Evacuation Plan for Operation Center

Handout, OSR Vehicle Pass [yellow]

Form, OSR On-Site Visitors [white]

Handout, OSR Area Access [white with red "X"]

Handout, Spring Valley Guest Pass [tan]

Handout, Spring Valley Resident Pass [green]

Handout, Miller Construction Work Access Pass [blue]

Badge [sample], OSR Area Access [white paper]

Badge [sample], OSR Area Access [CBDA version]

Historical:

After Action Report, Jeffery K. Smart, 3 Feb 93, with the following enclosures:

Memorandum for Record, from Jeffery K. Smart, subj: Historical Activities Log During Operation Safe Removal, 5 Jan - 3 Feb 93, 3 Feb 93

Memorandum for Record, subj: Items Found During Operation Safe Removal

Handout, After Action Report Format

Handout, American University Experiment Station Chronology

Handout, U.S. Army Organization Responsible for World War I Testing at American University Experiment Station

Article, "American University, the Chemical Warfare Service's First Training Ground and Research Center," undated

Excerpt, Amos A. Fries and Clarence J. West, Chemical Warfare (New York: McGraw-Hill Book Company, 1921)

Excerpt, Leo P. Brophy, Wyndham D. Miles, and Rexmond C. Cochrane, The Chemical Warfare Service: Laboratory to Field (Washington, DC: Office of the Chief of Military History, 1959)

Report, Van H. Manning, "Report to the Secretary of the Interior on the Research Work of the Bureau of Mines on War Gas Investigations, 1 Jul 1917 to 15 May 1918"

Memorandum for Record, J.W. Williams, subj: Camp American University Historical Search, 29 Oct 86

Memorandum for Record, from Jeffery K. Smart, subj: Chemical Agents, Toxins, Smoke, Incendiary, and Detonator Materials Investigated at American University Experiment Station During World War I, 27 Jan 93

**Memorandum for Corps of Engineers, from Jeffery K.
Smart, subj: Historical Information Gathered During
Operation Safe Removal, 5 Jan-1 Feb 93, 1 Feb 93
[without enclosures]**

Daily Journals:

Daily Staff Journal

Action Journal

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TECHNICAL ESCORT UNIT:

**After Action Report, LTC William T. Batt, with the following
enclosures:**

Munitions Summary, Change 1

Site Diagram

Magnetometer Sweep Map, 12 Jan 93

Sample Munition Assessment Sheet

TEU Personnel Density at Spring Valley

**TEU/67th EOD Chain-of-Command [Organization Chart,
distributed 15 Jan 93]**

SRF Chain-of-Command [Organization Chart]

Point-of-Contacts for Operation Safe Removal, 9 Jan 93

**Memorandum for Record, from 2LT Martin J. Weber, subj:
A.P. Hill Demolition Operations AAR, 27 Jan 93**

**Memorandum for Record, from LTC William T. Batt, subj:
A.P. Hill Demolition Operations AAR, 30 Jan 93**

**Memorandum for Commander, TEU, from CPT Susan Covell, subj:
Operational Trip Report, undated**

Aircraft Commander/Ship's Captain's Briefing, 27 Jan 93

Load List Suspect Items

Duty Officer's Log, CPT Susan L. Covell, 24 Jan - 30 Jan 93

Note on Item Weights

Uniform Hazardous Waste Manifest, AR 611921, 29 Jan 93

Uniform Hazardous Waste Manifest, AR 611920, 27 Jan 93

Materiel Courier Receipts, 27 Jan 93

Memorandum for Technical Escort Detachment, Pine Bluff Arsenal, subj: Letter of Instruction to Technical Escort Team Officer, 13 Jan 93

Letter, To Whom it may Concern, from SFC Alvin Montgomery, Pine Bluff Arsenal, 15 Jan 93

Report of Authorized Toll Telephone Calls (DA Form 360), for CPT Covell, 13-15 Jan 93

Duty Officer's Log, CPT Susan L. Covell, 14-15 Jan 93

Memorandum for Operation Center, from SFC Alvin Montgomery, subj: Flight Manifest, 15 Jan 93

Aircraft Commander/Ship's Captain's Briefing, 14 Jan 93

Memorandum for Commander, TEU, subj: Operational Trip Report, 13-15 Jan 93

Equipment List for Standard Escort Missions

Message, Commander, SRF, to Commander, Pine Bluff Arsenal, et al, subj: Notification of Intent to Conduct an Emergency Shipment, 14 Jan 93

Toxic Pickup Team/Equipment Check List, 13 Jan 93

Instructions for Public Announcements

Uniform Hazardous Waste Manifest, AR-611927, 12 Jan 93

Materiel Courier Receipts, 14 Jan 93

Maps, Washington, DC (showing location of Camp Springs, MD)

Materiel Courier Receipts, 8-29 Jan 93

Special Handling Data/Certification Forms, 29 Jan 93

Load List Suspect Items, 13 Jan 93

Load List Suspect Items, 26 Jan 93

Load List Suspect Items, 15 Jan 93

Memorandum for Record, subj: Personnel on Helicopter Flight from Spring Valley, Washington, DC to Ft AP Hill, Bowling Green, VA, 25 Jan 93

Memorandum for Record, subj: Personnel on Helicopter Flight from Spring Valley, Washington, DC to Ft AP Hill, Bowling Green, VA, 26 Jan 93

Memorandum for Record, LTC William T. Batt, subj: Assessment of Munitions Awaiting Transport to Aberdeen Proving Ground-Edgewood Area, 29 Jan 93

Note [Fax Transmittal], from TEU, to Mrs. Brooks, ERDEC

Memorandum for Record, LT Mark S. Buehlman, subj: Operation Safe Removal, Phase I, Spring Valley, Washington, DC, [soil sampling procedures and results], 20 Apr 93 [with enclosures]

Memorandum for TEU, from Special Pathogens Section, U.S. Army Medical Research Institute of Infectious Diseases, Fort Detrick, MD, subj: Analysis of Samples from Operation Safe Removal, Spring Valley Area, Washington, DC, 5 Feb 93 [with enclosure]

Message, Marguerite E. Brooks to LT Mark S. Buehlman, TEU, subj: DC Analysis, 5 Apr 93

Report, Tim Blades [After Action Report with Enclosures]

Sample Log, 6-29 Jan 93

Memorandum for Record, subj: Supply After Action Report Phase I

Memorandum for Record, CPT Gerald M. Muhl, subj: After Action Report Comments (Downrange), 1 Feb 93

Memorandum for EOD Operations Section, from 1SG Barry A. Johnson, subj: Evaluation of Special Equipment, 10 Mar 93

Hotline Sign In-Out Roster, 6-29 Jan 93

Memorandum for Commander, TEU, from Earnie R. Bryant, subj: Hotline Personnel Comments - After Action Report, Spring Valley Operation, 1993

Over-Pack Catalog, Munitions for Shipment

Memorandum for Record, subj: Safety and Security Annex to After Action Review, Operation Safe Removal

Memorandum for Record, subj: TEU Operations, Operation Safe Removal

Memorandum for Record, subj: Observation and Recommendations Distribution Listing, CBDA, 1 Feb 93

Memorandum for All Directors, Office Chiefs, Program Managers, from BG Friel, subj: Overtime for Support to Operation Safe Removal (OSR), Spring Valley, Washington, DC, 16 Feb 93

Memorandum for Supervisors of Non-CBDA Personnel, Operation Safe Removal (OSR), Spring Valley, Washington, DC, from BG Friel, subj: Overtime, 16 Feb 93

Cost Estimate Form, Safe Removal, 11 Jan 93

Handout, Incremental Costs Associated with the Spring Valley Restoration Operation

Message, Commander, CBDA, to HQDA, Washington, DC, subj: Operation Safe Removal - "Hot Wash," 10 Feb 93

Site Daily Logs, 5-29 Jan 93 [with enclosures to include correspondence, maps, notes, handouts, weather forecasts, materiel courier receipts, uniform hazardous waste manifests, and personnel rosters]

VOLUME IV, PART II

TECHNICAL ESCORT UNIT (CONTINUED):

Operations Daily Logs, 5-29 Jan 93 [with enclosures to include correspondence, maps, notes, handouts, materiel courier receipts, and personnel rosters]

VOLUME IV, PART III

TECHNICAL ESCORT UNIT (CONTINUED):

Assessment of Recovered Munitions, Log Book

Recovered UXO [item description by assigned number, to include line drawings, photographs, x-rays, and analysis]

VOLUME IV, PART IV

TECHNICAL ESCORT UNIT (CONTINUED):

Miscellaneous:

**Situation Report as of 2000 Hours, SFC Anthony L. May,
Operations NCO, 6 Jan 93**

Summary of Operations, 13-28 Jan 93

Hand Drawn Map of Pit Site, LTC Batt, 15 Jan 93

Database Printout of Munitions Recovered, 29 Jan 93

Contractor [Mr. Harvey J. McGeorge II]:

**Harvey J. McGeorge II, "WWI Chemical & Explosive
Munitions Identification Guide," Jan 93**

67TH ORDNANCE DETACHMENT (EOD):

**After Action Report, CPT John T. Dluzak, 3 Mar 93, with the
following enclosures:**

**Explosive Ordnance Incident Report (67-19-93), 5 Jan 93
[Spring Valley munitions recovery]**

**Memorandum for Record, from CPT John T. Dluzak, subj:
Incident 67-19-93 Personnel Roster, 12 Mar 93**

**Memorandum for Record, from CPT John T. Dluzak, subj:
Incident 67-19-93 Confirmed Identification/Disposition
of Items Found During Operation Safe Removal, 12 Mar 93**

**Memorandum for Record, from CPT John T. Dluzak, subj:
Incident 67-19-93 Narrative, 12 Mar 93**

Map, Site Layout

Map, Site Layout

Photographs [with captions]

Newspaper Articles

**Explosive Ordnance Incident Report (67-21-93), 13 Jan 93
[Silver Spring recovered round]**

**Memorandum for Record, LTC William Batt, subj: Safety Policy
for TEU Personnel Involved in the Safe Removal of
Chemical Filled Unexploded Ordnance at the Spring
Valley, Washington, DC Site (Operation Safe Removal),
19 Jan 93**

**Memorandum for Unit Personnel, CPT John T. Dluzak, subj:
Standard Operating Procedures (Emergency Destruction
Operation), 12 Jan 93**

**Memorandum for Record, 2LT Martin J. Weber, subj: A.P. Hill
Demolition Operations AAR, 27 Jan 93**

**Memorandum for Record, LTC William T. Batt, subj: A.P. Hill
Demolition Operations AAR, 30 Jan 93**

**Chemical Munitions Data [provided by Harvey J. McGeorge II,
Public Safety Group, and Jeffery K. Smart, CBDA
Historian]**

101ST CHEMICAL COMPANY:

End of Mission Report, CPT John E. Ensor, 5 Mar 93

**Memorandum for Record, CPT John E. Ensor, subj:
Decontamination Support Plan - Operation Safe Removal,
21 Jan 93**

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HEADQUARTERS COMMANDANT:

After Action Report, 22 Feb 93

**Sample Complimentary Cocktail Pass for Embassy Suites
[negotiated by MAJ Thompson]**

**Memorandum For Distribution, from MAJ Thompson, subj:
Lodging Transfers (Holiday Inn), 24 Jan 93**

OSR On-site Personnel Summary Report, 26 Jan 93

**Letter, from COL Dennis J. Clausen, Military District of
Washington to General Manager, Embassy Suites, subj:
Exemption Certificate for U.S. Army Personnel from DC
Occupancy, Sales, State and Federal Taxes, 27 Jan 93
[with enclosure]**

**Memorandum for All Concerned Personnel, from MAJ Thompson,
subj: Laundry/Dry Cleaning Services (Galaxie Cleaners),
27 Jan 93**

**Memorandum for Commander, CBDA, from COL Arthur J. Gipson,
AMC Assistant Deputy Chief of Staff for Personnel, subj:
Request for Approval of Actual Expense Authorization,
28 Jan 93 [with enclosures]**

**U.S. Army Damage Assessment Sheet, 5015 Warren St., NW,
Washington, DC**

Personnel List, 2 Feb 93

MILITARY DISTRICT OF WASHINGTON (MDW):

Emergency Operations Center Journal, 5-7 Jan 93

**Message, LTC Coleman to COL Hardesty or COL Read, subj:
[Mr. D. Walker's Press Release], 8 Jan 93, with
enclosure**

**Memorandum for Record, MG Streeter, subj: Operation Safe
Removal [draft closure plan], 29 Jan 93**

PUBLIC AFFAIRS:

After Action Report, James M. Allingham

Recap of News Media Inquiries/Activity, 5 Jan - 3 Feb 93

Information Updates:

1. 11 Jan 93	19. 22 Jan 93	37. 28 Jan 93
2. 12 Jan 93	20. 23 Jan 93	37. revised
3. 12 Jan 93	21. 23 Jan 93	38. 28 Jan 93
4. 12 Jan 93	22. 23 Jan 93	39. not issued
5. 13 Jan 93	23. 23 Jan 93	40. 28 Jan 93
6. 13 Jan 93	24. 24 Jan 93	41. 28 Jan 93
7. 13 Jan 93	25. 24 Jan 93	42. 29 Jan 93
8. 14 Jan 93	26. 25 Jan 93	43. 29 Jan 93
9. undated	27. 25 Jan 93	44. 29 Jan 93
10. 15 Jan 93	28. 25 Jan 93	45. 29 Jan 93
11. 15 Jan 93	29. 26 Jan 93	46. 30 Jan 93
12. 15 Jan 93	30. 26 Jan 93	47. 1 Feb 93
13. 15 Jan 93	31. 26 Jan 93	
14. 16 Jan 93	32. 26 Jan 93	
15. 21 Jan 93	33. 26 Jan 93	
16. 21 Jan 93	34. 27 Jan 93	
17. 21 Jan 93	35. 27 Jan 93	
18. 21 Jan 93	36. 27 Jan 93	

Fact Sheets:

**Adamsite
Lewisite
Phosgene
TEU**

William T. Batt
PINS
USRADS
Hazard Analysis
Use of Weather Data in OSR
WWI Chemical Munitions 75mm
WWI Chemical Munitions Livens
WWI Chemical Munitions Smoke Livens
WWI Chemical Munitions 3-inch Stokes
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Miscellaneous:

Sketch of WWI trenches on current day plat map
OSR Evacuation Map
Sketch of TEU Work Area, undated
Biosketch, BG Friel
Biosketch, COL Read
Statement for Media Query, 14 Jan 93
OSR PAO Phones, undated
Citizen Phone Log, 11 Jan - 2 Feb 93
Weather Reports
Collection of newspaper articles related to OSR
Letter, Patricia A. Liberatore to the Washington Post,
25 Jan 93

CORPS OF ENGINEERS:

Correspondence and Reports:

Information Paper, LTC Lund, subj: Spring Valley Project
(DC Environmental Issue), 11 Jan 93
Information Paper, subj: [Incremental Costs Associated
with the Spring Valley Restoration Operation],
12 Jan 93
Map, USRADS/UXO Site Map

**Memorandum for Commander, North Atlantic Div., et al,
from COL Capka, subj: Defense Environment
Restoration Program for FUDS, INPR for Site No.
C03DC0918, Spring Valley, Washington, DC, 19 Jan
93**

**Memorandum for Record, Kenneth Baumgardt, subj:
Investigation of Soil Stratigraphy in Open
Excavation, Spring Valley FUDS Site, 24 Jan 93**

Plan and Profile of Soil Stratigraphy Evaluations

Handouts:

**Handout, to Sedgwick Road Area Residents for 28 Jan 93
meeting**

**Handout, Spring Valley-Wesley Heights Citizens
Association, for 4 Feb 93 meeting**

ONSITE SAMPLING TEAM:

**After Action Report, Timothy A. Blades, with the following
enclosures:**

**Letter, from Kevin Koob, EPA to COL Kenison, CBDA, subj:
Spring Valley Soil Sampling Procedures, 10 Feb 93**

**Memorandum for Record, subj: [Total Number of Analysis from
Spring Valley]**

Calibration Chart

Map, Operation Safe Removal (Heated Sample Line, RTAP)

Air Sample Pit "A" Charts, 12-26 Jan 93

Air Sample Pit "B" Charts, 26-29 Jan 93

Bubbler Results Charts, 12-30 Jan 93

Quality Control Samples Charts, 12-30 Jan 93

DAAAMS Tube Analysis Charts, 11 Jan - 2 Feb 93

Personnel Monitoring Charts, 12-26 Jan 93

Arsene in Soil Charts, 12 Jan - 2 Feb 93

Headspace of Soil Samples Charts, 12-29 Jan 93

Soil HD in Soil Charts, 12-29 Jan 93

Miscellaneous Samples Charts, 18-30 Jan 93

PORTABLE ISOTOPIC NEUTRON SPECTROSCOPY (PINS):

Fact Sheet, Portable Neutron Spectroscopy (PINS)

Note, Idaho National Engineering Laboratory Participants in Operation Safe Removal

Note, PINS Results for 21 Jan 93

Memo of PINS Meeting at 1030, 23 Jan 93

PINS Summary by Item Number, 28 Jan 93

Article, Caffrey, et al, "Chemical Warfare Agent and High Explosive Identification by Spectroscopy of Neutron-Induced Gamma Rays," IEEE Transactions on Nuclear Science, Vol. 39, pp. 1422-1426 (1992)

OBSERVERS:

Ordnance Missile, Munition Center and School:

After Action Report, CPT Kenneth G. Crotty and MSG Paul M. Carter, with the following enclosures:

Assessment/Disposition Chart

TM 60A-1-1-5, Change 4, Explosive Ordnance Disposal Procedures, Access and Recovery-Buried UXO (U), 15 Aug 73 [portion on excavation and step procedures]

Draft Operations Flow Chart, undated

Chemical School:

After Action Report, LT Jamie M. Higgins

FEDERAL EMERGENCY MANAGEMENT AGENCY:

After Action Report, Harry L. Laird, 2 Feb 93

Memorandum for Record, subj: MATTS Personnel Departing for Emergency Deployment on January 12, 1993

Situation Reports (SITREPS):

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14 Jan 93	25 Jan 93	
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22 Jan 93	28 Jan 93	

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Black Telephone Description, 15 Jan 93
Black Telephone System, 21 Jan 93
Black Telephone System, 22 Jan 93
Black Telephone Description, 22 Jan 93
Black Telephone Description, undated
Black Telephone Description, 25 Jan 93

CIVIL AUTHORITIES:

Office of the Mayor:

Mayor's Order 93-7, subj: Emergency Executive Order,
26 Jan 93

Statement by Mayor Sharon Pratt Kelly Regarding U.S.
Army Reports Indicating Knowledge of Buried
Munitions Sites in 1986, 29 Jan 93

Emergency Preparedness:

List of Evacuations for 12 Jan 93

Letter to Residents of Yuma Street within the Evacuation
Zone who Choose Note to Evacuate During OSR, 22
Jan 93

Handout, Barrier Locations, undated

Montgomery County (MD) Department of Police:

Event Report, 13 Jan 93 [recovery of 75mm projectile
from private residence]

AMERICAN UNIVERSITY:

Fax Transmittal Form, David Taylor to MAJ Rick Thomas or
Jim Allingham, [American University CONFIDENTIAL], with
the following enclosures:

Information Paper, subj: Spring Valley Munitions Matter
[American University CONFIDENTIAL]

Letter, Eleanor Roberts Lewis, Advisory Neighborhood
Commission 3-D, to Joseph Duffey, President, American
University, 20 Jan 93 [American University CONFIDENTIAL]

AMERICAN RED CROSS:

Spring Valley Disaster Operation [list of volunteers]

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PHOTOGRAPHS:

Operation Safe Removal, SRF Spring Valley Logo [no number]

SRF Commander, Brigadier General George E. Friel [no number]

Historical Photographs:

1918 Aerial View of American University Experimental Station with Photo Interpretation Markings [no number]

1927 Aerial View of Former American University Experimental Station [no number]

1982 Aerial View of Former American University Experimental Station with 1918 Photo Interpretation Markings Overdrawn [no number]

1918 American University Buildings [A0431]

1918 View of Ground Weapons Tested at American University Experiment Station to Include Stokes Mortars and Livens Projectors [CWS 2224]

1918 Ground View of Circular Trenches [CWS 2244]

1918 Inside View of Circular Trenches [CWS 2243]

1918 Explosion of Test Round in Trench Test Area [A0401]

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52nd Court from 52nd Street [93-0622-103]

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52nd Court from 52nd Street [93-0622-121]

52nd Court [93-0622-257]

52nd Court [93-0622-307]

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Partially Buried Rounds and Debris [TEU Polaroid]

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5111 52nd Court with Awning Uncovered [93-0622-238]

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Wrapped Glass Bottle Recovered from Pit [93-0622-264]

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**Personnel Air Sampling a Wrapped Livens Projectile
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